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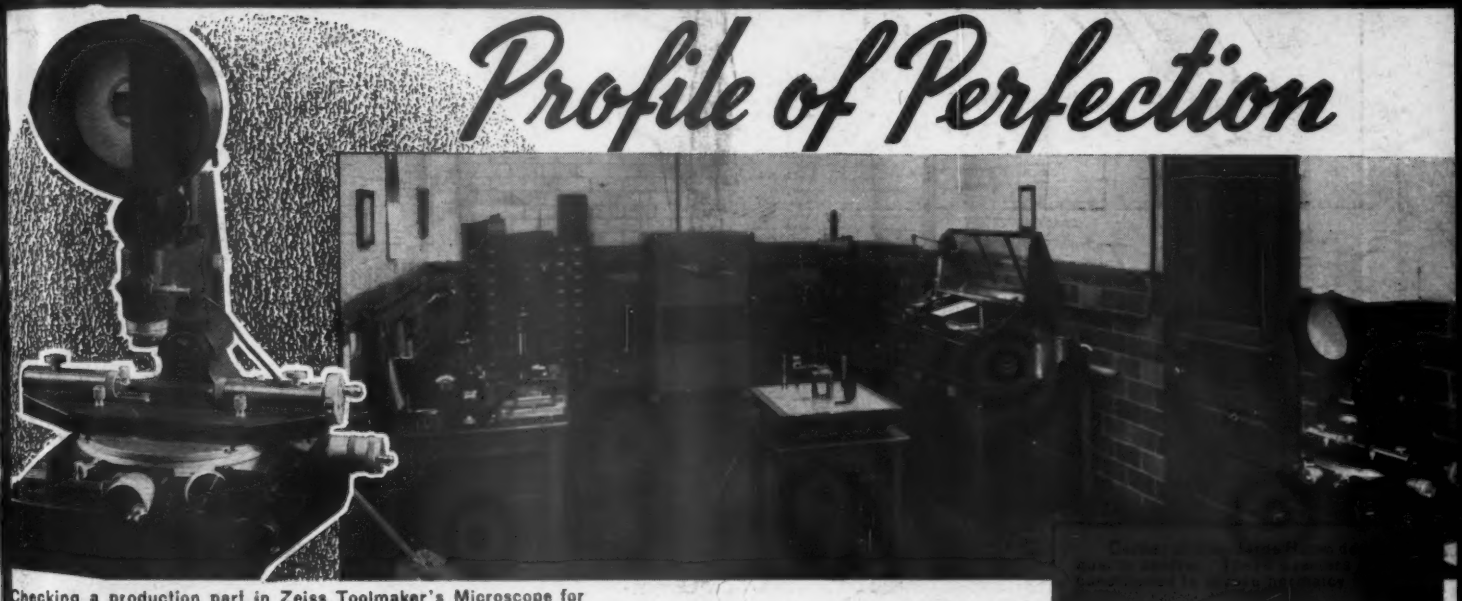

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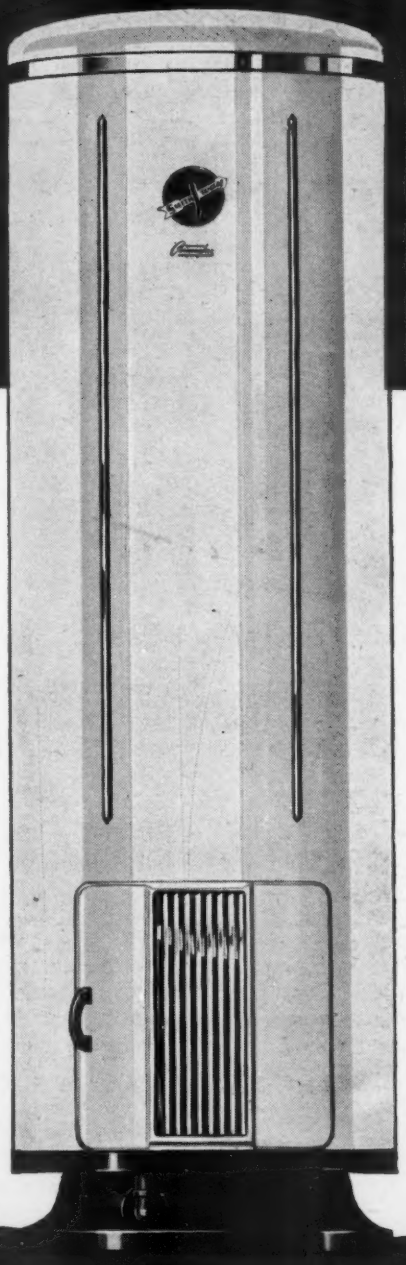

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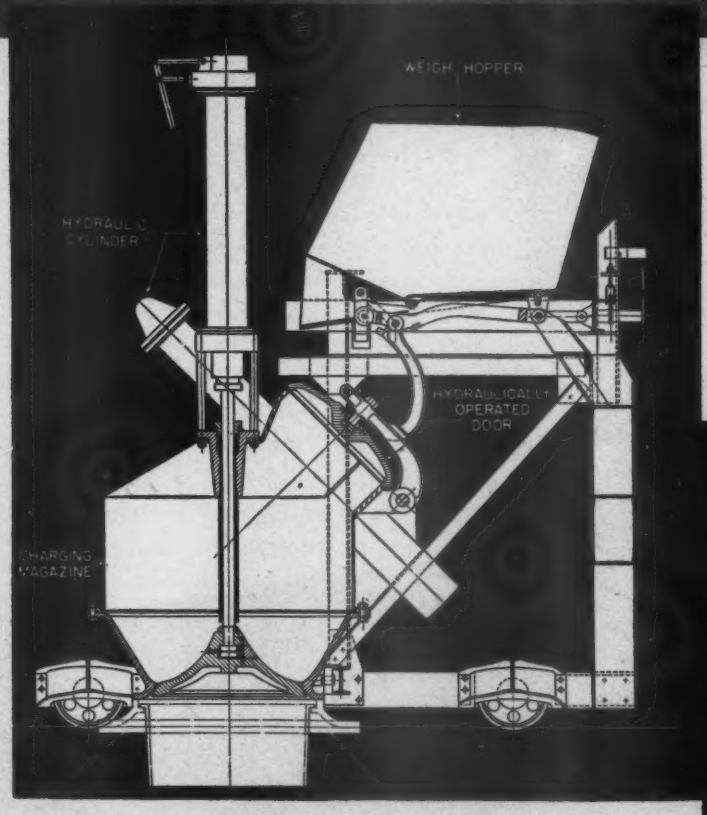

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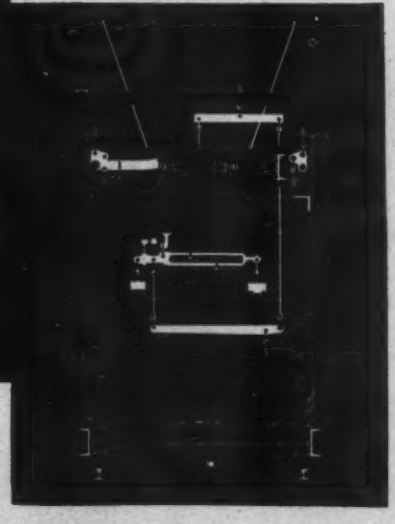

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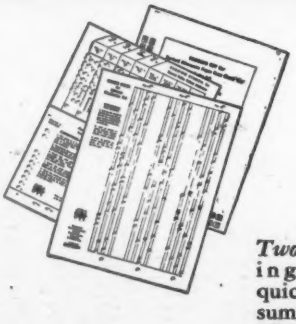

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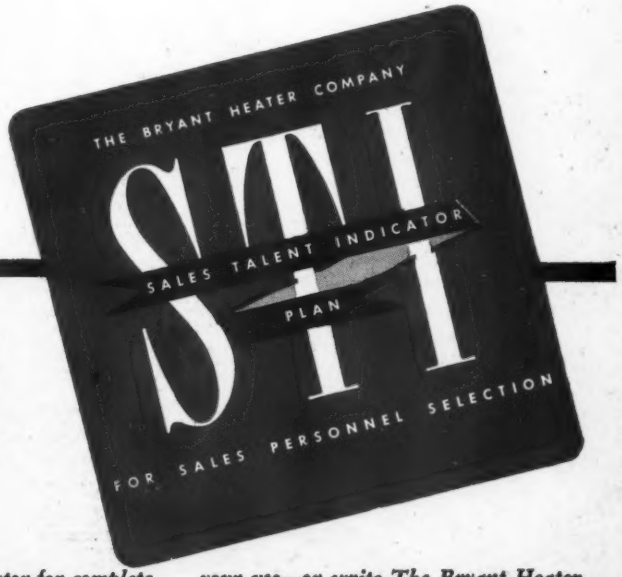

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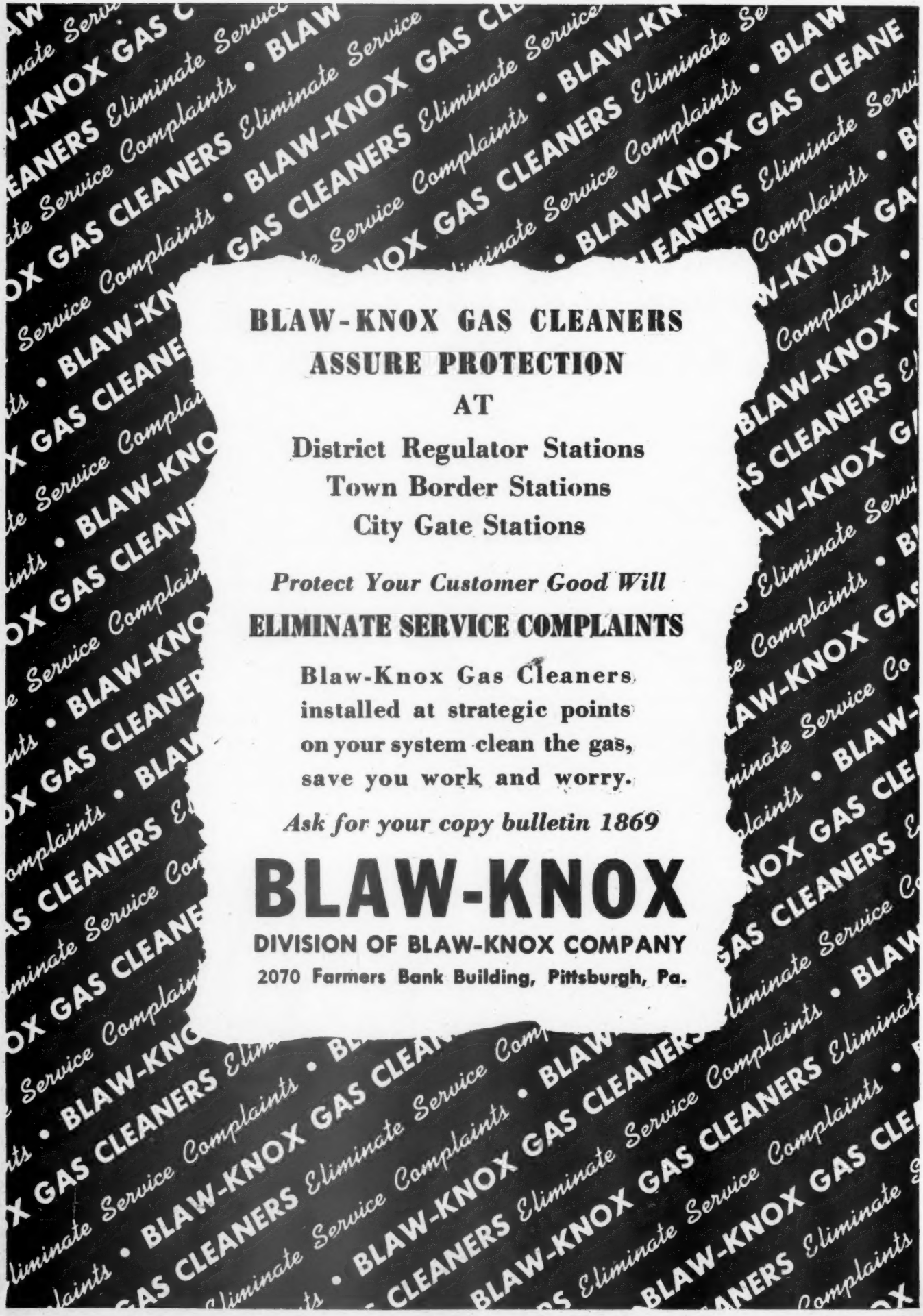
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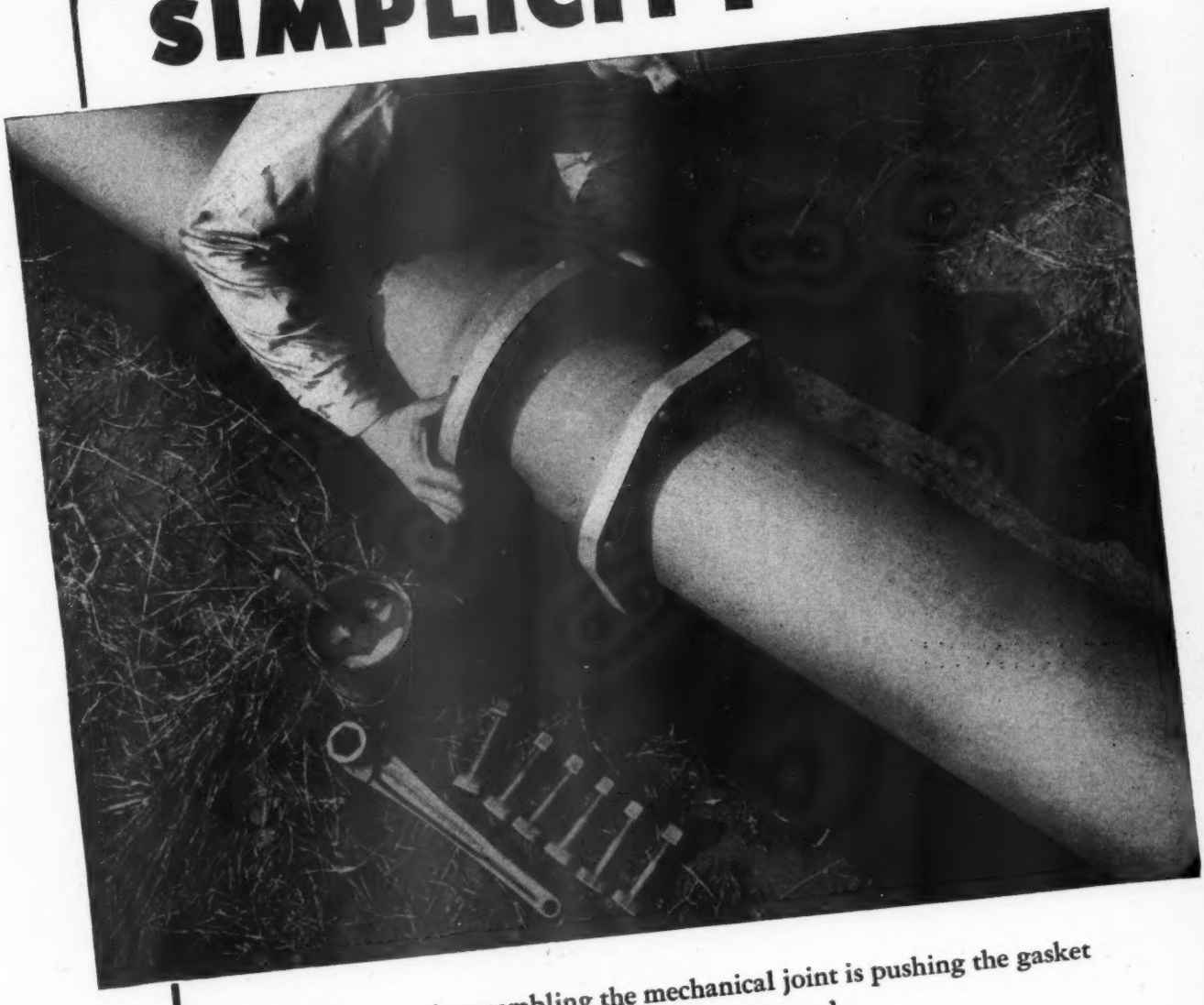

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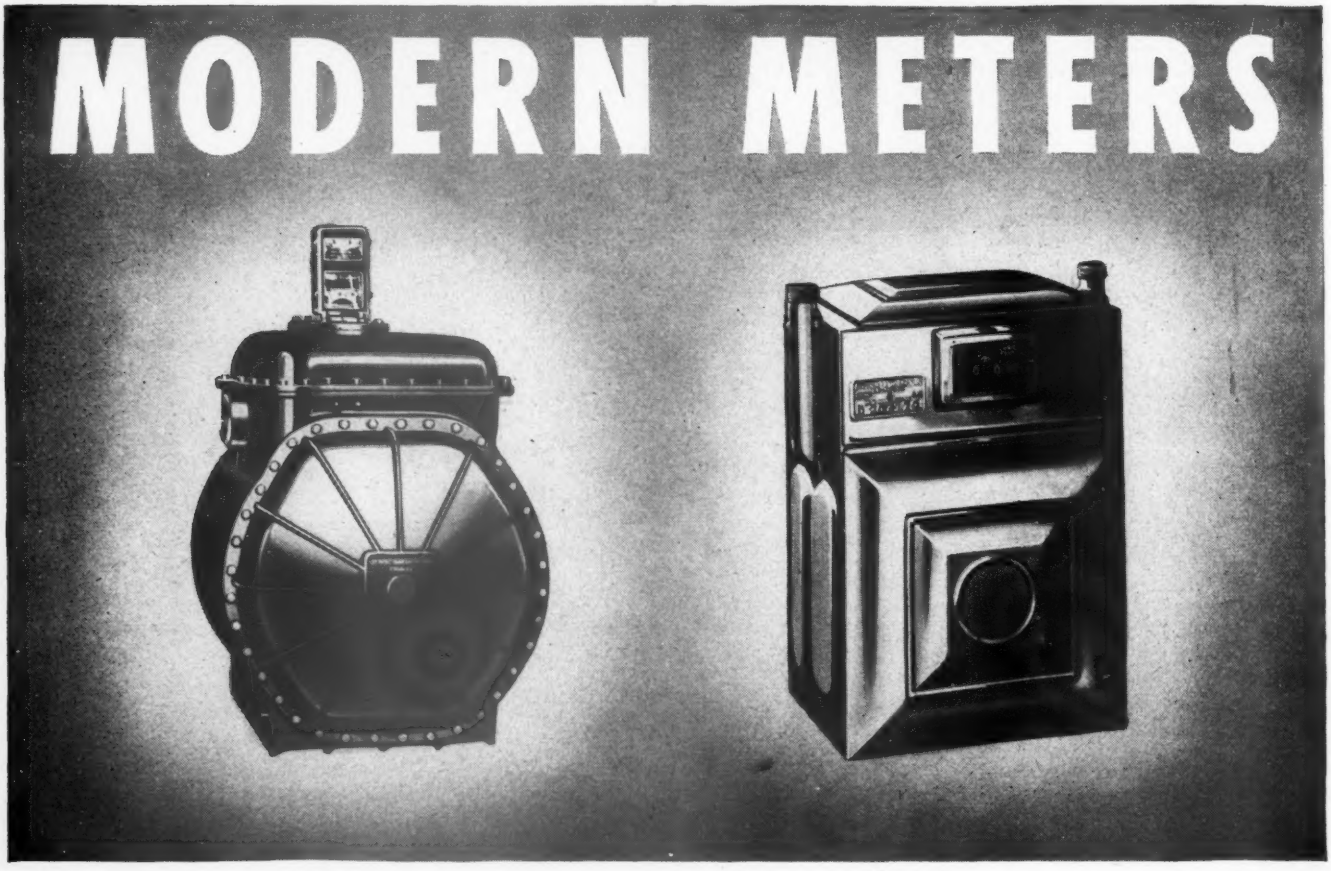
THE RECORD OF MODERN GAS SERVICE GIVES AN IMPORTANT PLACE TO



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GAS JOURNAL

VOLUME 162
NO. 4

The Securities and Exchange Commission —Its Aims and Achievements

By
Garnault Agassiz

NEARLY A DECADE has elapsed since the Public Utility Holding Company Act of 1935 received Congressional sanction, and the Securities and Exchange Commission which had been set up during the previous year to administer the Securities Act of 1933 and the Securities Exchange Act of 1934 was entrusted with the administration of this important and far-reaching statute. The moment would seem opportune, therefore, to review some of the more important achievements of this government agency, especially as they concern the Public Utility Holding Company Act of 1935, unquestionably the most controversial legislative instrument ever placed on the statute books of this country, and still, in spite of the years that have intervened since it became law, widely misunderstood even in informed circles.

Born of a national need, the Public Utility Holding Company Act of 1935 was passed by Congress for the specific purpose of regulating and rehabilitating the Public Utility Industry, which had grown so greatly in the preceding ten years as to become uncontrollable, and was threatening to collapse, with disaster not only to itself but to the entire economic structure. The situation was desperate; unquestionably the time had arrived for action.

Great indeed was the state of chaos in the Industry when the Securities and Exchange Commission accepted its new mandate, and difficult indeed was its task. However, it faced that task with courage and confidence, and carried on in spite af the most pronounced opposition and calumny. Patience and utter fairness were its watchwords, and always it was willing to hear the other side in its approach to every problem it was called upon to adjudicate.

Thus, the Securities and Exchange Commission has emerged from the long and bitter contest with its chief problems either solved or well on the way to solution, and, in so far as the Utility Holding Company Act of 1935 is concerned, its most important duties practically consummated. That all of these things have been brought about without causing serious repercussions in the industry is a tribute to the capacity, restraint, and farsightedness of the Commissioners and the experts who assist them.

This article is an independent and intensive study of the Securities and Exchange Commission's administration of the Public Utility Holding Company Act of 1935. It is a symposium of views based on interviews with Commissioners, economic, legal and other experts of the Commission, and some outstanding executives of the Gas Utility Industry. It is hoped by American Gas Journal that it will help to promote a wider knowledge of this controversial Statute.—Ed.

Constructive Purpose of the Article

It is not the purpose of this article to resurrect the past, however, but to look to the future, and attempt to show that it is not impossible for the Public Utility Industry and the Securities and Exchange Commission to work together harmoniously. One can not, nevertheless, disregard the abuses of the past, for they constitute the lessons which must aid in charting the course of the future. There are many who contend that these abuses were largely imaginary, which, of course, is fallacious for it was these abuses that caused Congress to pass the remedial legislation which is embodied in the Public Utility Holding Company Act. This is not to infer that some of the utility holding companies were not thoroughly clean in ethics and practices, but a good many were not. Of course, in many cases, there was only a lack of judgment involved, and for this there were certain grounds for justification. In the boom days of the late twenties a wave of unexampled optimism swept the country, and, with not a single cloud on the horizon, the tempo of business was full speed ahead. This was the so-called golden age of the utility industry, and there were few executives who could see the dangers ahead. Thus expansion—uneconomic competitive expansion—became the order of the day—and the

results were inevitable. If each public utility holding company had restricted itself to a homogeneous system with well integrated and locally managed operating subsidiaries, the need for the present legislation might never have arisen.

"Death Sentence" A Fallacy

As has been stated above, the definite object of the present article is to discuss the Public Utility Holding Company Act, attempting to clarify it as far as possible, and, at the same time, to correct some of the many misconceptions regarding it, as for example, the so-frequently mentioned "death sentence," which is so frequently referred to in even the most informed utility circles, but actually has no real existence in fact. As is generally known, the term "death sentence" was coined by the late Wendell L. Willkie, when he was president of Commonwealth & Southern Corporation, to designate a clause in the original bill, which was never adopted. Far more drastic than the measure finally passed, the original bill provided for the abolition of all utility holding companies within five years unless they were given grace by the Federal Power Commission. So extreme, indeed, were many of the provisions of this measure that it was opposed by Judge Robert E. Healy—the only original member of the Commission still serving —who, testifying before the House Committee On Interstate and Foreign Commerce, declared that he felt unable to support the bill in its then form.

Commissioner Healy Corrects Some Death Sentence Misconceptions

In order to remove the wide misconceptions surrounding the passage of the Public Utility Holding Company Act of 1935 we quote the following excerpts from an address delivered by Judge Healy before the Practising Law Institute, New York, on November 1st, 1941:

"It is not my purpose," said Judge Healy, "to discuss legislative history. However, I should like to end one misconception which has been repeated so often that it is generally accepted as true, I refer to the notion that Section 11 passed the Senate by a margin of one vote. It is true that in the course of Senate debate a series of amendments were introduced by Senator Dietrich which he characterized as designed to eliminate from this bill the so-called "death- sentence," ' and that these amendments were rejected by a vote of 45 to 44. But the prototype of Section 11 then before the Senate was far more drastic than the present Section 11. Furthermore, the final vote on the passage of the Senate bill, including the old drastic form of Section 11, was 56 to 32—a majority of almost two-thirds—and the House bill was passed by a vote of 323 to 81. The conference report, which compromised some of the differences between the Senate and House bills, was agreed to by the House by a vote of 222 to 112. Presumably the conference report met with little opposition from the Senate, since no vote was reported when the Senate agreed to it. Furthermore, it was for the first more drastic Senate draft that the label "death sentence" was devised. This label was intended to help to prevent the passage of that draft, and possibly the present Section 11(b)1, and has made the enforcement of this particular law of the United States somewhat difficult. Today it seems plain that the Act is proving to be a life saver for the operating companies, without which, of course there would be no utility industry."

First Steps in Administration of Act

Thus the Public Utility Holding Company Act of 1935 became the law, and the Securities and Exchange Commission proceeded to set in motion the machinery to carry out its provisions. At first this proved difficult, for never, perhaps, was the administration of a statute so widely or vehemently opposed.

As the Securities and Exchange Commission interpreted them, its duties under the Act were to reorganize the Utility Industry by regulation, and through simplification of corporate structures and geographical integration, develop well-managed and sound systems that would render great public service, and yet not be sufficiently extensive in operations as to be outside the realm of adequate control.

Commission Has Neither Control Over Rates Nor Police Powers

Contrary to general belief, the Securities and Exchange Commission has no control over rates, nor any direct police powers, except in its right to turn over to the Department of Justice cases of flagrant law violation. Nor has it jurisdiction over holding companies whose operations are intrastate, for Section 3(a)1 of the Act specifically provides for the exemption of such utility companies and their subsidiaries from the provisions, although the Commission is endowed with the necessary power to deny such exemption if it feels that it would be detrimental either to the public or the interest of customers.

Highly Controversial Section 3(a)

Here is the exact wording of the highly controversial Section 3(a): The Commission, by rules and regulations upon its own motion, or by order upon application, shall exempt any holding company, and every subsidiary company thereof as such, from any provision or provisions of this title, unless and except insofar as it finds the exemption detrimental to the public interest or the interests of investors or consumers, if

"(1) such holding company, and every subsidiary company thereof which is a public-utility company from which such holding company derives, directly or indirectly, any material part of its income, are predominantly intrastate in character and carry on their business substantially in a single State in which such holding company and every subsidiary company thereof are organized;

(2) such holding company is predominantly a public-utility company whose operations as such do not extend beyond the State in which it is organized and States contiguous thereto;

(3) such holding company is only incidentally a holding company, being primarily engaged or interested in one or more businesses other than the business of a public-utility company and (A) not deriving, directly or indirectly, any material part of its income from any one or more subsidiary companies, the principal business of which is that of a public-utility company, or (B) deriving a material part of its income from any one or more such subsidiary companies, if substantially all the outstanding securities of such companies are owned, directly or indirectly, by such holding company;

(4) Such holding company is temporarily a holding company solely by reason of the acquisition of securities for purposes of liquidation or distribution in connection with a bona fide debt previously contracted or in connection with a bona fide arrangement for the underwriting or distribution of securities; or

(5) such holding company is not, and derives no material part of its

income, directly or indirectly, from any one or more subsidiary companies which are, a company or companies the principal business of which within the United States is that of a public-utility company."

Commission Attempts Conciliation

When the Securities and Exchange Commission commenced to function, it adopted a conciliatory attitude in its endeavor to bring about compliance with the new legislation, being careful to afford all holding companies the opportunity to file voluntary plans of re-organization, but few availed themselves of the privilege, preferring to contest the constitutionality of the Act in the courts or to play a waiting game against developments.

Commission Takes Action Under Section 11B1 of the Act

When it became apparent, therefore, that most of the holding companies were determined to fight for what they felt were their inherent rights to the very last ditch, the Commission, in the Spring of 1940, instituted proceedings against some of them under Subsection 11B1 of the Act, which reads:

"It shall be the duty of the Commission, as soon as practicable after January 1, 1938:

"To require by order, after notice and opportunity for hearing, that each registered holding company, and each subsidiary company thereof, shall take such action as the Commission shall find necessary to limit the operations of the holding-company system of which such company is a part to a single integrated public-utility system, and to such other businesses as are reasonably incidental, or economically necessary or appropriate to the operations of such integrated public-utility system.

Provided, however, That the Commission shall permit a registered holding company to continue to control one or more additional integrated public-utility systems, if, after notice and opportunity for hearing, it finds that:

"A. Each of such additional systems can not be operated as an independent system without the loss of substantial economies which can be secured by the retention of control by such holding company of such system;

"B. All of such additional systems are located in one State, or in adjoining States, or in a contiguous foreign country; and

"C. The continued combination of such systems under the control of such holding company is not so large (considering the state of the part and the area or region affected) as to impair the advantages of localized management, efficient operation, or the effectiveness of regulation."

Studies of Public-Utility Systems Under Section 30

When the Commission proceeded with the enforcement of section 11B1 of the Act, some of the holding companies took exception to its action on the ground that in doing so it contravened the spirit if not the letter of Section 30 which provides for the making of comprehensive studies of public utility systems and investment companies.

As applied to public-utility companies, Section 30 reads:

"The Commission is authorized and directed to make studies and investigations of public-utility companies, the territories served or which can be served by public-utility companies, and the manner in which the same are or can be served, to determine the sizes, types, and locations of public-utility companies which do or can operate most economically and efficiently in the public interest, in the interest of investors and consumers, and in furtherance of a wider and more economical use of gas and electric energy; upon the basis of such investigations and studies the Commission shall make public from time to time its recommendations as to the type and size of geographically and economically integrated public-utility systems which, having regard for the nature and character of the locality served, can best promote and harmonize the interests of the public, the investor, and the consumer."

Proceeds Also Under Section 11B2

At about the same time, the Securities and Exchange Commission also instituted proceedings against other companies under Section 11B2 of the Act, which provides for corporate structure simplification, equitable distribution of voting power, and the elimination of unessential holding company systems.

Supreme Court Decision Ends Most Litigation

As has been stated, every effort to defeat the Public Utility Act of 1935 was made by the affected companies, and when, in spite of the strenuous opposition, the Statute finally became law, the majority of

THE SECURITIES AND EXCHANGE COMMISSION—SOME FACTS CONCERNING IT

The Securities and Exchange Commission was instituted by Congress to administer the Securities Act of 1933 and the Securities Exchange Act of 1934. Subsequently its powers were extended to give it supervision over other Federal statutes, so that today it administers in addition to the original acts, the Public-Utility Holding Company Act of 1935, the Trust Indenture Act of 1939, the Investment Company Act of 1940, and the Investment Advisers Act of 1940. In addition to these duties, it participates also in corporate reorganizations under Chapter X of the Amended Bankruptcy Act, popularly known as the Chandler Act. Its duties here are advisory.

The Securities and Exchange Commission is a non-political body, and for this reason not more than two of its members may have the same party affiliations. It is made up of five members, one of whom is chairman. He is chosen from among the commissoners themselves. As at present constituted, the Commission is composed of the following members with one vacancy: Ganson Purcell, Chairman, Robert E. Healy, Sumner T. Pike, Robert K. McConnaughey, the vacancy being attributable to the resignation of Robert H. O'Brien, who resigned recently to become Assistant to the President of Paramount Pictures, Incorporated. Orval L. DuBois is Secretary, while Leslie T. Fournier, is Special Assistant.

In its wide and important duties, the Securities and Exchange Commission is aided by a highly trained staff of legal and technical experts. Its employees number about 1,300, three-quarters of whom are attached to the head office in Philadelphia, and the remainder to the 11 regional offices.

Total administration costs approximate more than $5,000,000 a year.

the holding-company systems did their utmost to avoid compliance with its provisions, chiefly through challenging its constitutionality in the courts. At one time, indeed, 58 suits, on behalf of approximately a hundred holding companies, were on file against the Securities and Exchange Commission in United States courts. However, when, in March, 1938, the Supreme Court handed down its decision upholding the constitutionality of the registration provision of the Act the suits were all withdrawn, for the issue was settled.

Appeals from Orders Under Section 11

Since that time, however, appeals have been taken to the United States Supreme Court from divestment issued by the Commission against North American and Engineers Public Service Company under 11B1 of the Statute and against Electric Power & Light Corporation and American Power & Light Corporation, both integrated gas and electric subsidiaries of the Electric Bond & Share Corporation, under Section 11B2.

It is anticipated that before long this issue will also be determined, as the United States Supreme Court, by writ of certiorari, has agreed to review the orders affecting all of these four holding companies.

Adverse Decision Will Be Accepted In Good Grace

However, whatever may be the ultimate decision—its hearing is impossible at present because of lack of a quorum—it is expected that all of the companies concerned will accept an adverse decision with good grace. Here is approximately what the four companies involved expect to do in conformation of the Commission's orders if the decision goes against them, or if the cases are never brought to trial. They are based on interviews with the presidents of the holding companies involved.

The North American Company

Under Section 11 of the Public Utility Holding Company Act, the Securities and Exchange Commission has ordered The North American Company to dispose of practically all of its properties other than the system of the Union Electric Company of Missouri. This means that North American must divest itself of controlling interests in Wisconsin Electric Power Company, Washington Railway and Electric Company, The Cleveland Electric Illuminating Company and North American Light & Power Company which, already in process of dissolution, owns a 35 per cent interest in Northern Natural Gas Company. It also must dispose of a 24 per cent interest (12 per cent voting power) in the common stock of Pacific Gas and Electric Company.

As with Engineers Public Service Company, The North American Company has appealed to the United States Supreme Court to contest the constitutionality of Section 11. Since its case has not been reviewed by the Supreme Court because of the lack of necessary quorum of Justices, however, North American has continued to follow a policy which has been in the direction of compliance with the Commission's order.

In addition to distributing as dividends to stockholders stocks of companies in which it has investments, North American has reduced its indebtedness by more than $43,000,000, or 62 per cent, during the last five years. In commenting on this program, Edward L. Shea, president of North American, said recently:

"While the reduction in income resulting from the distribution to our stockholders of earning assets is partly offset by interest savings resulting from the reduction of indebtedness, it has an adverse influence upon the Company's earning power. Nevertheless, we believe the program that has been followed is in the best interests of our stockholders because of conditions created by the Holding Company Act."

Over the last six years, North American has eliminated its principal intermediate holding company, North American Edison Company; distributed practically all of its holdings of capital stock of The Detroit Edison Company; distributed part of its holdings of common stocks of Washington Railway and Electric Company and Pacific Gas and Electric Company, and transferred its ownership of Wisconsin Gas & Electric Company and Wisconsin Michigan Power Company to Wisconsin Electric Power Company, and its companies serving the District of Columbia and the St. Louis area have filed plans for consolidation and corporate simplification. Also, North American has submitted to the Commission a Plan of Reorganization which provides for the division of its properties into four regional groups.

Engineers Public Service Company

If the outcome of the present litigation involving Section 11(b)(1) shall make it necessary or desirable to do so, it is hoped that it will be possible to develop a plan under Section 11(e) which will meet with the approval of the SEC under which Engineers' interest in Gulf States Utilities Company and El Paso Electric Company (Texas) would be distributed to its security holders through liquidating holding companies, the preferred stocks of which would be distributed to the preferred stockholders of Engineers and the common stocks of which would be distributed to the common stockholders of Engineers. The net income of such liquidating holding companies would be used exclusively for payment of preferred dividends and retirement of their preferred stock. The two remaining smaller properties would be disposed of by sales when such sales could be made on an advantageous basis and the proceeds from such sales would be devoted to the retirement of the preferred stock of the liquidating holding companies. When the preferred stocks of such holding companies had been entirely retired, the common stock of their subsidiaries would be distributed pro rata in liquidation to their common stockholders. Upon establishment of such liquidating holding companies the mutual service company, located in New York, would be dissolved. Engineers, as the parent of Virginia Electric and Power Company alone, would also proceed to liquidate in the same manner as proposed for the liquidating holding companies over Gulf States Utilities Company and El Paso Electric Company when the tax advantages of retaining such relationship were deemed no longer of present or prospective value, leaving Virginia Electric and Power an independent operating company.

Electric Power & Light Corporation

Electric Power & Light Corporation has likewise followed a course looking to compliance with the provisions of the Public Utility Holding Company Act. Since 1935 this system has made great strides, not only in refunding and strengthening its subsidiary companies, but

also in the simplification of corporate and capital structure. In this period Electric has eliminated 15 subsidiary companies, and today there are but two layers of companies beneath it. The number of separate issues of senior securities has been very substantially decreased, some 38 separate issues of bonds and preferred stocks having been eliminated. In addition, they have eliminated nearly 95 million dollars of second preferred issues and today none of their subsidiaries have any of this type of issue outstanding.

A plan has recently been filed which, if it becomes effective, will have the result of removing Utah Power & Light Company from the Electric system.

The Electric Power & Light Corporation is doing its utmost not only to comply with the demands of the S.E.C. but to anticipate them, and is preparing to file a plan of reorganization that it believes will effect complete compliance with the Act.

The American Power & Light Company

In 1940 the Securities and Exchange Commission commenced proceedings against American Power & Light Company and other subsidiaries of Electric Bond & Share Company. In the summer of 1941, while the Commission's proceedings were pending, American Power & Light filed a plan of reorganization which it hoped would comply with the Public-Utility Holding Company Act, but, in August, 1942, the Commission rejected the plan in a lengthy opinion.

Since that time, American Power & Light Company has filed numerous proceedings having for their purpose the complete reorganization of the company, the most important of which, perhaps, is the complete elimination of its outstanding debt.

In the meantime, the company is awaiting action by the United States Supreme Court on its petition for a review of the decision of the United States Court of Appeals for the First District affirming the order of the Commission that its affairs be wound up and the company itself dissolved.

Better Relations Between the Public Utility Holding Companies and the Commission

The disposition, growing almost daily more pronounced, of the Public Utility Industry to meet the Securities and Exchange Commission at least half way is a healthful sign, and it would seem to presage a dawn of a new day in which mutual understanding of common problems and a mutual desire for a greater industry will have submerged entirely the misunderstandings, differences, animosities of the past. It is not to exaggerate, indeed, to state that there are few forward-looking utility executives in the country today, gas or electric, who do not in heart at least stand behind the Commission in its fundamental aims, which succinctly expressed, are: To protect the investor and the consumer. To strengthen utility companies through the establishment of conservative debt ratios, the increase of reserves and equity cushions, and the elimination of write-ups—to erect, in fact, on the tried foundations of free, private enterprise a public utility industry that shall rise to new heights of achievement and public usefulness.

How Some Holding Companies Have Obtained Control of Operating Utilities

Fundamental to an adequate understanding of the Public Utility Holding Company Act of 1935, in the opinion of the Securities and Exchange Commission, is the fact that, to control the policies of an operating subsidiary, a holding company needs to obtain only the proxies of a majority of its voting stock, and where security distribution is wide not even a 51 per cent proportion is essential. It is for this reason that under the Act the ownership of even 10 per cent of a subsidiary operating company's common stock by a utility-holding company is considered *prima facie* evidence that it is a holding company under the Statute. However, where such a holding company is able to show that such 10 per cent ownership does not constitute control, then such system is not regarded as a holding company subject to the provisions of the Act.

Enormous Extent and Power of Holding Company Empires

Before the Securities and Exchange Commission was set up, it was not uncommon for ten or more utility holding companies and their subsidiaries to operate in a single state, and even today some states are checker-boarded in the ownership or control of utilities, particularly those of gas. In the early thirties, indeed, one great utility empire was operating in 32 states and abroad, while 73 per cent of the country's total energy—gas and electric—was being distributed by the eight largest holding company systems, which controlled 66.4 per cent of manufactured and 25.3 of natural gas.

Up to the present, it has been the policy of the Securities and Exchange Commission to give chief attention to the administrations of Sections 11V1 and 11B2 of the Act, because it feels that this is the most important of its duties under the mandate accorded it by Congress, and because, too, it realizes that the sooner various proceedings under these two important sections are consummated, so much sooner will the day of the Industry's complete rehabilitation arrive.

Utilities Have Their Privileges

Ten years of intensive study by the Securities and Exchange Commission and its staff of experts have convinced it that neither the gas nor electric utilities have much ground for complaint as to their immediate position or their future prospects. Their lot is not an unhappy one it contends. Under the American practice, utilities of all kinds enjoy what is tantamount to a virtual monopoly in the communities they serve, except, of course, where there is direct competition between gas and electricity, and in the case of the so-called combination company such competition is nominal. Then, it must be remembered, the utilities enjoy as an inherent privilege the right to utilize the public thoroughfares for their mains and transmission lines, which is logical, for even rudimentary economics would show that the duplication of such facilities is economically unsound. Nor is it the Commission's purpose to interfere with the practice. It has always permitted the dual ownership of gas and electric companies where the community in question feels that the combination company is in a better position to render service than would be two competitive companies. However, this does not change the Commission's position that when a combined electric

and gas utility system is being divested by a public-utility holding company—and no question has been raised by the local authorities as to the continued operation of both services by the same company they should be separated, and in cases where companies are permitted to retain such combination companies it insists on their complying with the A.B.C. provisions of Section 11(b)L of the Act.

Holding Companies Permitted to Select Systems to be Retained

In its administration of the Act, the Securities and Exchange Commission is meticulous in affording the affected holding-company systems ample opportunity to present their cases, and where divestment is ordered it is equally meticulous in allowing them to select the operating companies which they wish to retain, but they demand that such as are retained shall be limited to one or two, not several distinct systems. Here, indeed, is the crux of the present controversy between the holding companies and the Commission. The latter has the statute to guide it, and therefore enjoys a distinct advantage. However, in its interpretation of it it does everything in its power to show judgment, sympathy, and fairness.

These are the provisions of Section 2A 29B of the Statute as they affect gas utilities, which, of course, must guide the Commission in its deliberations and decisions:

"Integrated public-utility system means, as applied to gas-utility companies, a system consisting of one or more gas-utility companies which are so located and related that substantial economies may be effected by being operated as a single system, confined in its operations to a single area or region, in one or more States, but not so large as to impair (considering the state of the art and the area or region affected) the advantages of localized management, efficient operation, and effectiveness of regulation: *Provided*, That gas-utility companies deriving natural gas from a common source of supply may be deemed to be included in a single area or region."

Some Holding Companies Indispensable

It must be remembered, also, that the Splawn report to the Committee On Interstate and Foreign Commerce recommended the complete abolition of all utility holding companies. However, the Securities and Exchange Commission holds no such revolutionary views, for it realizes that many such holding companies are not only advantageous but, in some cases, indispensable. Nevertheless, it is the opinion of the Commission that the true interpretation of the term "integrated system" means one that is located in the same or contiguous states, and is engaged in gas or electric operations, not both, and that where a holding company, because of unusual conditions, is permitted to retain dual companies, the A.B.C. standards of Section 11 of the Act must be complied with. It points out, and properly so, that under Section 7 of the Clayton Act the acquisition by a holding company of two competitive utilities is inhibited.

Certainly, it would be fallacious to maintain that the well-regulated and efficiently managed public-utility system does not occupy a distinct and an important role in the national economy. It provides operating utilities with the capital so necessary to their existence, and at low rates. It fulfils other important functions also, such as maintaining managerial, engineering, and technical efficiency, so important to the production of high quality products at reasonable costs. The holding company has other advantages also. The well-balanced ones need no justification.

In the opinion of the Securities and Exchange Commission the existence of some non-integrated holding companies is justified under some circumstances, such, for example, where the state will not permit companies to operate within its boundaries unless it is registered under its laws, making integration, except through holding companies, impossible. Here the Commission does not attempt to interfere. According to the Commission, an admirable example of such a system is the backbone line of American Gas & Electric Company, that is absolutely homogeneous as to geography and operations because its heavy duty line runs unbrokenly across Virginia, West Virginia, a small distance into Tennessee, through Ohio, and up into Michigan.

Difficulties of Holding Company Act Interpretation

Interpreting the Public Utility Holding Company Act of 1935 as it applies to gas utilities is no easy task for the Securities and Exchange Commission, especially in the case of manufactured gas companies, whose operations are confined, as a rule, to single communities.

Natural gas companies are under the jurisdiction of the Federal Power Commission, and not many of them are in the purview of the Commission's jurisdiction. However, when such gas company is a subsidiary of a public-utility holding company it is subject to the Act if it is engaged in the retail distribution of fuel. For example, the Panhandle Eastern Pipe Line System, having no retail outlets and being uncontrolled by a holding company is exempt from the Act, whereas, another transmission company, also without retail distribution facilities, is not, and this is because it is a subsidiary of a utility holding company.

Statute Not As Specific With Gas As With Electricity

Admittedly, the Public Utility Holding Company Act of 1935 is not so perfectly framed in its application to gas as to electrical companies, and the reason is that the statute treats very specifically every phase of electricity, and the regional integration of these is in no way complicated. This is not the case, however, with manufactured gas companies, which, generally speaking can not be integrated at all. This condition makes it extremely difficult for the Commission to interpret with exactitude its powers relating to them.

That is why, perhaps, the Securities and Exchange Commission apparently feels that all gas companies, where practicable, should be independent of holding company management, so that they will be in a position to render adequate service to the communities they serve by manufacturing the highest possible quality of fuel at a reasonable cost, and, at the same time, show a reasonable profit on operations. Although neither the Commission nor any of its members are authority for it, the apparent trend is toward complete divorce between gas and electricity.

Consolidated Natural Gas System A Notable Example of Divestment

A notable example of holding company divestment of gas companies is to be found in the recently organized Consolidated Natural Gas Company formed to acquire from Standard Oil Company

(New Jersey) the following gas companies: Peoples Natural Gas Company, Pittsburgh, Pa.; East Ohio Gas Company, Cleveland, Ohio; Hope Natural Gas Company, Clarksburg, West Virginia; River Gas Company, Marietta, Ohio, and New York State Natural Gas Corporation, Pittsburgh, Pa.

When, as of December 15, 1943 the $200,000,000 Consolidated Natural Gas Company was set up, all of its 125,000 stockholders were the stockholders of the Standard Oil Company (New Jersey). However, there has been a gradual change in the ownership of these securities, especially since they were listed on the New York Stock Exchange, and it is expected that before long all suggestion of the former control will have disappeared. Of course, it must be understood that any affiliations between Consolidated Natural Gas Company and Standard Oil Company (New Jersey) were severed completely when the new organization was set up.

It is the hope and belief of the Securities and Exchange Commission that what has occurred in the case of the Consolidated Natural Gas Company will find reflection in the setting up of yet other integrated gas utility systems, for this is the ideal set up: A single holding company with well-balanced and locally operated subsidiaries.

This does not mean that there are not in existence today numerous other large and well-integrated natural gas systems, serving vast areas of the country, and contributing effectively to the industrial development. One of the most comprehensive systems is that of the Columbia Gas & Electric Corporation, which extends in almost unbroken line from New York through Pennsylvania, Ohio, Kentucky, West Virginia, Virginia, and Maryland, its 34 operating companies providing more than 5,000,000 persons with electric light and gas. It has approximately 32,000 miles of gas pipe lines, of which about 13,800 are transmission. Its total sales of gas in 1944 aggregated 172,183,000 mcf.

Work of Disintegration Proceeding Apace

Under the Securities and Exchange Commission's direction this work of disintegration is proceeding steadily, and with gratifying dispatch, as will be seen from the fact that since the Holding Company Act became effective no less than 266 companies have been separated from holding company systems. Their aggregate assets approximated three and three-quarter billion dollars, $654,000,000 of which represented gas utilities.

The administration of the more important sections of the Public Utility Holding Company Act of 1935, however, has not been the only concern of the Securities and Exchange Commission. Its activities in behalf of the Utility Industry have been many and diversified. One of the most important has been its unremitting efforts to eliminate from the books of the holding companies write-ups and excess valuations, a thankless but a very essential job. The procedure of the Commission in putting this policy into effect is thus explained by Chairman Purcell:

"We, like the Federal Power Commission and the various state regulatory commissions, have required the elimination of these write-ups either directly or through an intelligent and conservative program of amortization. We have secured very definite results, as will be seen readily from the statement that to date more than $500,000,000 in such excess valuations have been written off the public utility holding Companies' books. The process of dehydration is continuing just as fast as our original cost studies are completed. Unquestionably this action will strengthen immeasurably the financial structure of the whole utility industry, and bring confidence in the integrity of utility securities, which, I need not add, is much needed."

No Proof That Commission Has Depressed Utility Securities

There is a prevalent fallacy that the Securities and Exchange Commission's enforcement of the Public Utility Holding Company Act of 1935 has affected injuriously the utility industry's financial structure. This, indeed, is far from the case, for some years before the authority was set up, public-utility holding company stocks had reached their all-time lows. The boom had burst, and had been superseded by the great depression, from whose insidious effects the country was emerging when the Commission first commenced to function. From highs of $200 a share to lows of $5 and $10, such was the fate of the common stocks of the utility holding companies. There were practically no exceptions for on the average this class of security fell on the average 89 per cent in the troublous years referred to.

Generally speaking, the administration of the Public Utility Holding Company Act of 1935 by the Securities and Exchange Commission has had a salutary rather than a baneful effect on utility securities. Its basic policy, of course, has been to protect the investor, while safeguarding the public. This is exemplified by its action in the case of the dissolution proceedings of United Light & Power, where the total assets were insufficient to pay the full liquidating amount plus accumulated arrearages on the outstanding preferred stock the Commission took the position, with one member dissenting, that these were not matured claims, and therefore the common stockholders should be afforded some recognition. Its position has recently been upheld by a 5 to 3 decision of the United States Supreme Court.

That the Securities and Exchange Commission has not retarded the issuance of public utility securities is proved by the record. To date it has approved the issuance of new securities in the staggering sum of $7,500,000,000. These, admittedly, are preponderantly of the refunding type but they have exercised nevertheless a significant influence on the monetary affairs of the industry through a material lowering of annual interest rates, thus improving the earning position.

Chairman Purcell Sees the Future With Confidence

According to Chairman Purcell, the action of the Commission in resorting to every possible contingency to reduce the utility debt structure, increase reserves, establish conservative debt ratios, and eliminate excess book values has had a far-reaching effect, so that the industry today is in the soundest financial position in its history. He admits, of course, that the increased tempo of business has been responsible in part, but he feels that public recognition of the improved fundamentals have been an important contributory factor.

Some of the Achievements of the Commission

An accomplishment with which the Securities and Exchange Commission points to with a certain measure of pride is its work in the

direction of simplification of corporate structures and improvement of accounting practices, which, its economists maintain, have saved millions of dollars to the industry. Still another of its achievements has been a very substantial reduction in the number and complexity of the forms that the utilities are required to furnish the Commission periodically; in fact, it is said that today many companies are able to utilize in large part their annual report to their stockholders as the basis of that which it must each year furnish the Commission.

Still another of the Securities and Exchange Commission's attainments has been its success in effecting substantial reductions in counsel and trustee fees in connection with reorganization and other proceedings. These are said to average at least 30 per cent, and in extreme cases to approximate 75 per cent.

The Securities and Exchange Commission feels that it has aided the industry materially in its regulation of the service companies, which now, when controlled by a utility holding company, are required to render service to the operating subsidiaries at cost.

The Commission Evinces No Desire to Extend Its Powers

There has been a growing resentment in recent years against the disposition of so-called bureaucratic government to expand its prerogatives through a too liberal interpretation of the statutes under which it carries on. However, no such charge can be levelled against the Securities and Exchange Commission, at least in its administration of the Public Utility Holding Company Act, and this for the very good reason that as it administers it narrows automatically the sphere of its own responsibility and jurisdiction, turning over to state regulatory bodies balanced utility systems that they can readily control, where, formerly, the average public-utility holding company was too complicated for adequate regulatory supervision.

Commission Respects State Rights

It should be borne in mind, also, that the Securities and Exchange Commission is meticulous in recognizing the sanctity of states' rights. For example, it has never attempted to interfere with the issuance of securities which have been properly approved by a state regulatory commission, provided, of course, that the company concerned is an integrated system doing an intrastate business.

Finally, it can be stated unequivocally that in carrying out its mandate to administer the Public Utility Holding Company Act of 1935, the Securities Exchange Commission has done its utmost to be eminently just and impartial. It has never attempted to broaden its constitutional powers, nor perpetuate them. It has done its best within the limits of human capacity to contribute to the upbuilding of a great industry, while observing to the letter its responsibilities under the Act which governs them.

Natural Gas as a Supplemental Source of Gasoline

In the March issue of Fortune, Time & Life Building, New York, was a department, "Business at War." One of the articles in this department was titled "Coming: Ersatz Gasoline." It gives the opinions of several men prominent in the oil and natural gas industries on the subject of producing gasoline from natural gas. The article follows.

Nineteen years ago the distinguished Professor Dr. Franz Fischer, director of the Kaiser Wilhelm Institute for Coal Research, came to the U. S. to deliver a paper before the International Coal Conference on the new Fischer-Tropsch process for making liquid fuels from coal. Professor Fischer was purposely vague; he did not say just how the process was operated, and he did not give the exact make-up of his catalyst. Later, talking to an American friend, he lamented the "scientist's dilemma." "As a scientist, I would like to tell all I know," he said, "but I have responsibilities to the mine owners who support my institute. So I must compromise, and tell only part."

In 1938 American oil companies, by obtaining licenses under the Fischer synthesis, were able to fill in many of the essential details Dr. Fischer had omitted from his 1926 paper. They already knew something of the operation of the first Fischer plant, built in Germany in 1935 by Ruhrchemie, and had kept fairly well abreast of developments there by Ruhrchemie and I.G. Farben. The outbreak of war ended most of the normal international scientific exchange, but present information is that Germany is now producing about 25 per cent of its synthetic fuels with the Fischer process and 75 per cent by the Bergius "direct hydrogenation" process. Presumably the Fischer process has been improved in Germany. Recently it has been improved, too, in the laboratory stage, in the U.S. Oil research men have been working on it, usually with natural gas as a raw material, and with special reason: soon after the war gas probably will be used to supply this country with a considerable part of its gasoline and Diesel oil.

The time now seems to be in sight when the U.S. should no longer depend upon crude petroleum alone for its liquid-fuel requirements. U.S. proved reserves now stand at about 20 billion barrels ,and are being used at the rate of about 1.4 billion barrels a year (though this went to 1.7 billion barrels in 1944). By simple arithmetic, this would indicate enough crude for fourteen years at the present rate of production. The calculation, however, contains two assumptions that do not greatly affect its validity: first, that no new oil will be found at all; second, that all of the present reserve can be got aboveground in fourteen years—it will take fifty.

Though the U.S. may run short of crude, it is blessed with other raw materials from which liquid fuels can be made. It has reserves of natural gas that, on a heat-content basis, probably are about equal to the proved petroleum reserves. It has oil shale in the West—sufficient to maintain the normal rate of oil production for sixty-five years. In Utah and in Alberta, Canada, there are vast "tar sands," which contain enough oil for gasoline for perhaps one hundred years. Finally, the U.S. and Canada have vast coal reserves—more than half of the world's—enough to supply all coal as well as liquid-fuel needs for one thousand years or more.

The U.S. will turn first to natural gas as a supplemental source of gaso-

(Continued on page 60)

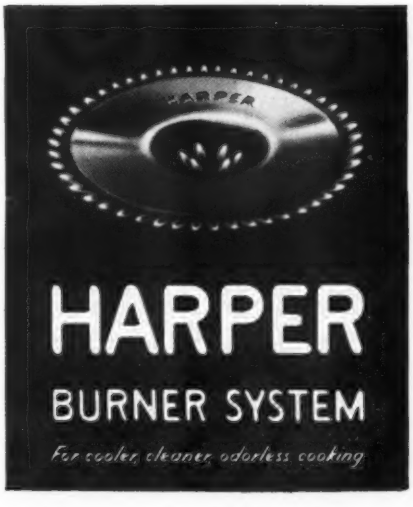
"What woman *wills*... will be"

Today she wants better top burners

A RECENT SURVEY proved that the women who buy postwar ranges will insist on *dual purpose* top burners... having one heat for frying and to *start* foods boiling and another separate heat to *maintain* the cooking.

Representing today's *ultimate* in top burner construction, the Harper Burner System meets these demands. Each burner is actually 2 burners in 1... a burner within a burner... both operated and controlled by a single handle. The small, inner *cooking* burner can be used entirely independently of the outer *starting* burner. No other top burner possesses this vital advantage—which insures easy, accurate control: just the right heat for every type of top burner cooking.

The Harper Burner System meets perfectly the top burner requirements in the AGA campaign of appliance improvement and promotion... designed to enhance the position of gas as the ideal cooking fuel by making possible cooler, cleaner kitchens and better cooking results.



On next page
WHAT USERS SAY

Copr. 1945, Harper-Wyman Co.

WHAT USERS SAY

about the

HARPER BURNER SYSTEM

"THERE ARE *many* reasons, of course, why I like the Harper Burner System on my range. I consider very important the fact that it keeps my kitchen cooler. The heat is centered *under* the cooking vessel, and the accurate control makes possible using just the right amount of heat needed. As a result, my cooking can be done without overheating the kitchen with wasted gas." Mrs. Mary Von Achen, 88-25 132nd St., Richmond Hill, L. I., N. Y.

What the Industry Has Found

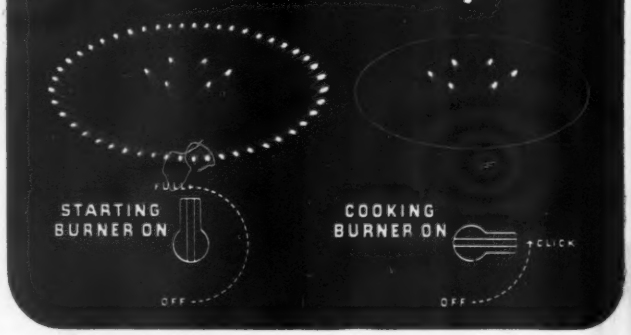
FIRMS featuring the Harper Burner System have found it gives them definite selling advantages—by demonstrating its advantages the customer is easily "sold up" to a better price range.

Simple yet dramatic demonstrations on the sales floor prove beyond question to the customer that the Harper Burner System offers:

1. ECONOMY—fuel savings up to 39%
2. Cleaner, odorless cooking.
3. Less guess-work in cooking.
4. A cooler kitchen.
5. More healthful, less *wasteful* cooking.
6. Fewer hours in the kitchen.

Model styles may change and improvements be made in other parts of the postwar gas range, but experience and present research indicate that the Harper Burner System will continue to represent the *best* in top burner construction.

NOTE: A *new* and *improved* Harper Burner System will be ready when the industry can resume production of deluxe ranges. Harper-Wyman Company, 8562 Vincennes Avenue, Chicago 20, Ill.



The Harper Burner System operates on the unique principle of "2 burners in 1"... a STARTING BURNER plus a small, economical COOKING BURNER, both controlled by the same handle. It is subject to finer gradations of low heats—greater control and economy—than any other top burner made.

HARPER BURNER SYSTEM

"HOLDS THE LINES FOR GAS"

HARPER BURNER SYSTEM

—One of the standards of top burner performance under GP

Methods of Reducing Gas Range Surface Temperatures

By
R. M. Conner,
Director American Gas Association
Testing Laboratories

R. M. CONNER

ALTHOUGH the subject covered by this paper has been treated largely from the standpoint of its relation to gas range construction, the general theories advanced apply equally well to practically all types of gas burning equipment. Consequently, the information which follows should prove of value not only to gas range manufacturers, but to all who are interested in the construction and performance of domestic gas burning appliances.

Laboratories Bulletins, Nos. 7 and 33, indicate the effectiveness of various types of materials for insulating gas range ovens and broilers and contain many valuable suggestions for reducing surface temperatures of such sections. They summarize, in fact, the greatest part of present day knowledge on such subjects, particularly insofar as it relates to methods of reducing excessive heat losses from gas ranges.

It seems hardly necessary to state that excessive heat radiated or otherwise liberated from oven and broiler surfaces of cooking appliances has from the beginning represented one of our most troublesome service problems. Fortunately from a competitive standpoint, however, this characteristic has not been confined solely to gas ranges. As a matter of fact, it has been even more pronounced in the case of similar types of appliances consuming other fuels. Be this as it may, however, everyone in our business is not only interested in effecting substantial increases in operating efficiency by the reduction of excessive heat losses, but what is even more important, providing equipment that can be utilized even more conveniently and comfortably than heretofore by our customers.

Radiation and convection losses from all types of equipment burning gas in confined spaces can be reduced by:

1. **Use of satisfactory insulating materials, properly applied**
2. **Proper selection of materials of construction**
3. **Reduction of leakage of flue gases from openings other than flues**
4. **Elimination of metal to metal contacts**

The greatest possibilities for reducing heat losses from exterior surfaces of gas ranges lie in the judicious selection and application of insulating materials to such surfaces. Such materials may consist of mineral, glass, or rock wool, or other types of siliceous compounds, cork, or even dead air space. Because the use of such insulating mediums has become quite well established as a result of years of experience, it does not seem advisable to spend any great amount of time considering this phase of the subject. It should be mentioned in passing, however, that findings outlined in great detail in Bulletin No. 7 prove quite conclusively that there are practical limits beyond which one should not go in the application of even the best forms of insulation.

While thicknesses of insulation in excess of 2 to 2½ in. (the practical maximum) will reduce oven heat maintenance rates slightly, on the other hand, they may increase necessary preheating requirements somewhat, to say nothing of adding to the construction cost of the range. Table 1 from Bulletin No. 33 which follows provides essential data on the most commonly used forms of insulation. Fig. 1 also provides further interesting and confirming information on the fact that beyond 2½ or 3 in. insulating materials are rather ineffective.

Experimental findings reported in Bulletins Nos. 7 and 33 also prove quite conclusively that the density to which ground and fibrous materials are packed has a considerable bearing on their effectiveness. While it is common practice, not only in gas range construction but water heaters as well, to pack insulation to the point which will prevent settling during handling and shipping, minimum densities necessary to prevent settling of 3 common types of insulating material for various heights of insulating columns are set forth in Table 2.

A study of Table 1, which admittedly does not cover all types of insulation will indicate that there is considerable difference in insulating qualities even between the most com-

Low surface temperatures for gas appliances are a most desirable characteristic from the viewpoint of all our people and our customers. In the case of ranges the greatest accomplishments in this direction can be brought about by (1) proper insulation (2) elimination of flue gas leakage through doors (3) reduction of metal to metal contacts. This paper presents practical suggestions on ways and means of accomplishing these 3 objectives. In the main, theories advanced are equally applicable to other types of domestic gas burning equipment.

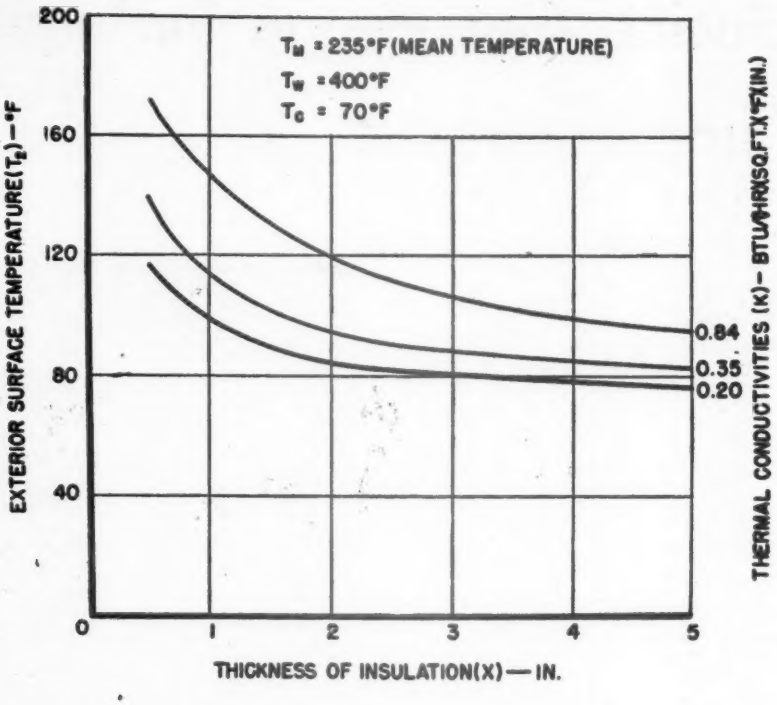


FIG. 1 — Theoretical Effect of Thermal Conductivity of Insulation on Surface Temperature.

Although the use of various types of gaskets for reducing flue gas leakage around oven and broiler doors proved rather ineffective during our experimental work, the idea definitely seems to possess merit. It is obvious that if the travel of hot gases can be materially retarded or deflected elsewhere than through openings around oven doors, thus preventing oven door handles and frames from becoming the hottest portions of the gas range which may be touched by the operator, real progress will be made. Accordingly, any constructional feature that can be incorporated either in the door or its frame that will retard, or better yet eliminate leakage entirely, would be a step in the right direction. A tongue and groove door joint design, reinforced frames to prevent excessive warping, stronger and more effective door springs, and even the use of durable gasket materials seem indicated despite the lack of generally satisfactory results of research

mon types of insulating materials employed. Certainly the greatest asset of most of the kinds shown is the ease with which they can be applied. On the other hand, one of their very undesirable characteristics is their tendency to settle which must be properly anticipated when the range is undergoing construction. Extremely high spot temperatures, which incidentally represent one of the most common criticisms of present day types of gas range construction, can, in fact, generally be attributed to settling.

Unless it is quite clearly defined, Item No. 2 entitled, Proper Selection of Materials of Construction, may prove somewhat ambiguous. After all, the choice of materials from which gas range ovens and broilers can be constructed is rather limited. Consequently, outside of the use of highly reflective materials for oven linings, door frames and panels, we find no place for exercise of any appreciable amount of latitude. This feature, therefore, is mentioned principally for the purpose of encouraging new thought. If, for example, some form of plastic material were found that would satisfactorily resist temperatures of the order of 800 degrees and possessed sufficient rigidity for use in oven and broiler door frames, one of the most troublesome sources of undesirable heat transfer would be eliminated. The same general theory could also be applied to many other portions of gas range construction.

Table 1
Thermal Conductivity of Various Types of Insulating Materials

Type of Material	*Description*	*Density Lbs/Cu Ft*	*Conductivity Btu/Hr/Sq Ft./°F/In.*
Glass Wool (loose)	Glass fibers 0.0003 to 0.0006 in. diameter	1.5—3	0.27
Granular	Made from combined silicate of lime and alumina	4—6	0.24
Granular	Expanded vermiculite, partical size—3 plus 14	5—8	0.32
Mineral Wool (loose)*	All forms, typical	10—12	0.27
Rock Wool (loose)	Fibrous material made from rocks	20	0.30
Rock Wool (loose)	Fibrous material made from rocks	18	0.29
Rock Wool (loose)	Fibrous material made from rocks	14	0.28
Rock Wool (loose)	Fibrous material made from rocks	10	0.27
Asbestos Board	Corrugated asbestos board	(4 plies per in.)	0.53
	Corrugated asbestos board	(8 plies per in.)	0.37
Asbestos Board	Pressed asbestos mill board	60	0.84
Air Space	Aluminum foil, 7 air spaces per 2.5 in.	0.2	0.30
Silica Aerogel	Opacified (see note)	8.5	0.15

Note: Conductivity values are for mean insulation temperatures of 70 to 100°F. for the various materials.

* *Loose wools are also supplied in blanket form.*

on the latter item. Incidentally, unsatisfactory findings on gaskets seem more attributable to consideration of an insufficient range of materials rather than any lack of logic of the idea. Finally reduction of excessive gas range ambient temperatures calls very definitely for the elimination of leakage around oven and broiler doors. Any design or constructional feature, therefore, that will accomplish this objective should reduce oven and broiler door surface temperatures by at least 25 per cent.

It is believed that the greatest possibilities for reducing excessive oven and broiler surface temperatures lie in the elimination of metal to metal contact. Any engineer understands that all metals are very good heat conductors when contrasted with various types of insulating materials now commonly employed. It is obvious, therefore, that if a temperature as low as 400 F is carried inside an oven, a substantial amount of heat absorbed by its linings would be conducted to outside surfaces wherever metal to metal contact exists, irrespective of the type or amount of insulation between inner and outer walls.

If it were possible to effectively float the inner walls of an oven or broiler in insulating material, this from the standpoint of reducing excessive exterior temperatures would represent the optimum in construction. Such a design, however, is not feasible from a practical standpoint; consequently, the next best thing seems to be to approach this type of construction as closely as is practically possible. Admittedly, metal to metal contact can be reduced to a much greater extent than is generally the case in gas range construction today. Accordingly, every reasonable effort should be directed to this end. In addition, materials low in thermal conductivity should be employed to the fullest possible extent in joining inner and outer sections together. Even though general use of materials of low thermal conductivity for the purposes indicated were not practical, a great deal of progress could be made by eliminating unnecessary metal to metal contacts and attaching inner and outer sections with bolts of a material of the lowest attainable heat conductivity. Final development of the 100 per cent primary air burner should simplify appliance manufacturers' problems of the nature indicated to a very great extent. If, for example, it were unnecessary to provide for admission of secondary air, a major simplification of construction could be accomplished. Even without such developments, however, marked progress can still be made and this statement applied with equal force to gas water heaters as well as to other types of domestic gas burning equipment.

Table 2

Minimum Density of Insulation Necessary to Prevent Settling in Different Heights of Vertical Insulating Column

Type of Material	Height of Insulating Column—In. 15	20	25	30	35
			Lb/Cu Ft		
Mineral or Rock Wool (Long Fiber)	8.5	9.0	10.0	10.5	11.0
Mineral or Rock Wool (Med. Fiber Length)	8.0	8.0	8.5	8.5	9.0
Glass Wool	2.5-3.0	2.5-3.0	2.5-3.0	2.5-3.0	2.5-3.0

It is somewhat difficult to appreciate the significance of the various items mentioned heretofore unless they are considered collectively. In one instance for example, during our research it was found that by sealing an oven door to minimize flue gas leakage, elimination of metal to metal contact between inner and outer door panels and the addition of a highly reflective surface to the inner side of the oven door brought about a total decrease in the average surface temperature of the door edge from 187 to 110 F, or a decrease in temperature rise from 117 to 40 F. In other words, these constructional changes although minor and inexpensive in nature, actually reduced surface temperature rise by about 66 per cent. In another case, simply by sealing the door and eliminating metal contact the average temperature rise on the door frame was decreased roughly 58 per cent.

Fortunately none of the suggested improvements in gas range construction are extremely difficult or expensive. In this respect we have an advantage over some of our competitors. That these changes will be made sooner or later there is no doubt. Some of them, it is gratifying to state, have already been incorporated in contemporary designs; what is needed, however, is a general acceptance of new and more progressive ideas.

While it certainly should be obvious, it seems important enough to repeat that if we can accomplish worthwhile reductions in heat losses brought about by excessive gas range or other gas appliances surface temperatures, we will be making a real contribution to gas service. Accomplishments of this nature will not only assist by improving our competitive position, but what is far more important in this modern day and age enhance the comfort and convenience with which gas service can be utilized.

CRUSE-KEMPER COMPANY
AMBLER, PA.
We are working on War Equipment and supplying Essential and Emergency Requirements for the Gas Industry.
GAS HOLDERS, GAS HOLDER REPAIRS, PURIFIERS
COMPLETE GAS HOLDER INSPECTION SERVICE
41 YEARS OF SOUND
STEEL PLATE CONSTRUCTION

A Powerful Force

To Help You Sell

Postwar Gas Ranges

THE NAME MAGIC CHEF has come to be a *magic name* in gas ranges to millions of Americans. There have been two reasons for this. First, the bedrock quality and advanced features of Magic Chef gas ranges. And second, a consistent and powerful program of Magic Chef advertising.

The advertisement reproduced at the right appears in the April WOMAN'S HOME COMPANION and May GOOD HOUSEKEEPING, and is one of a series designed to whet the appetites of range buyers for postwar Magic Chef gas ranges. It is part of a sustained campaign appearing in leading national magazines. This advertising is a powerful force that is *keeping* Magic Chef a Magic Name—a name you can tie to for greater postwar range sales.

For further information on what Magic Chef can mean to you . . . just drop us a line.

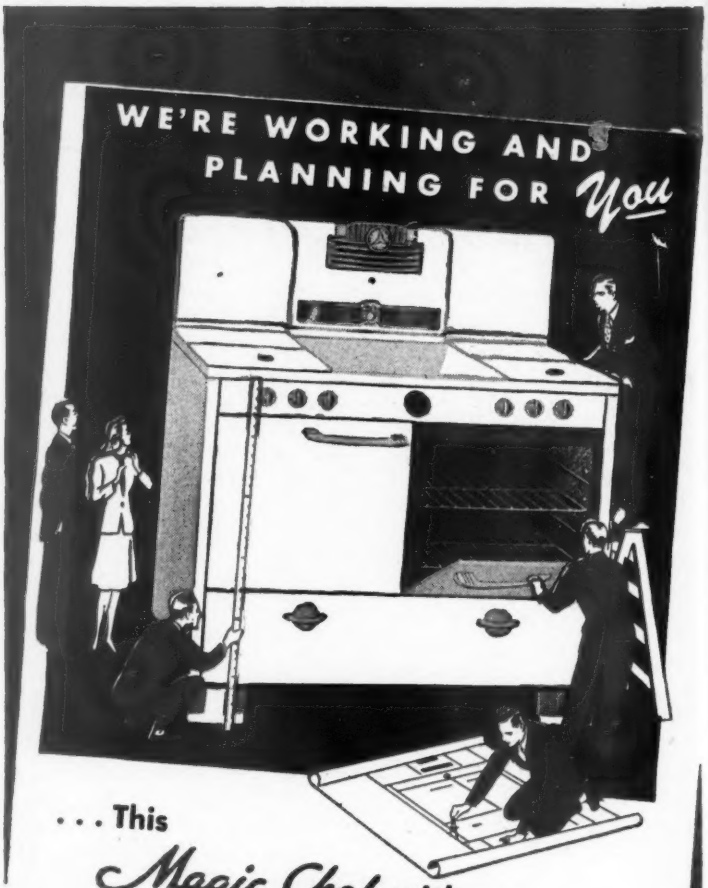
AMERICAN STOVE COMPANY
4901 Perkins Avenue · Cleveland, Ohio
Sales Offices in Principal Cities

Magic Chef

RED WHEEL GAS RANGES
AND HEAVY DUTY GAS COOKING EQUIPMENT

Look for this "CP" Seal on Magic Chef—Trade Mark of AGA and EM.

Awarded to Quick Meal Stove Co. and Geo. M. Clark & Co. Divisions of American Stove Co.



. . . This *Magic Chef* with a

Dozen Magic Helps

1 **Automatic Oven Cooking!** Simply set clock and temperature control

2 **Red Wheel Oven Heat Regulator!** Just set regulator—better baking and roasting assured

3 **Automatic Lighting!** All burners light automatically on "CP" Magic Chef

4 **Even Heat**—for better top burner cooking

5 **Swing-Out Broiler**—easy to clean, better broiling results with no smoke

6 **Convenient Work Top**—extra surface for preparing or serving food

7 **Non-Clog Burner**—spilled food can't clog; no messy burner cleaning

8 **Magic Insulation**—full insulation assures cooler kitchens

9 **Cross-Fire Oven Burner**—for better roasting and baking

10 **Easy Cleaning**—all parts designed for cleaning easily—burner trays can be washed like dishes

11 **Porcelain Enamel Finish**—easy to clean—will keep looking new and beautiful

12 **Look for "CP" Seal** of approval Trade-mark of A G A and E M.

Just as soon as conditions permit, we're planning to have ready for you this fine postwar Magic Chef . . . ultra modern in design . . . beautiful . . . thoughtfully planned for your ease and convenience.

It will be the range with a dozen "Magic Helps" to take the work and worry out of cooking. Just wait and see how this Magic Chef takes advantage of gas . . . the *ideal* fuel . . . to give you everything you ever hoped a range could offer!

★ ★ ★

If you live beyond the gas mains, postwar Magic Chef ranges will be available for "Pyrofax" Gas in eastern and central states and for other L. P. (bottled and tank) gases elsewhere.

Magic Chef

AMERICAN STOVE COMPANY · Cleveland, Ohio

Copr 1945 American Stove Co.

THE SATURDAY EVENING POST • GOOD HOUSEKEEPING
WOMAN'S HOME COMPANION • ARCHITECTURAL FORUM
PARENTS' MAGAZINE • BETTER HOMES & GARDENS

45,265,474 READERS

Pacific Coast Gas Association Holds Sectional Meetings

Conferences Include Water Heating, Ranges and Refrigeration, Accounting and Home Service

By
Fred A. Herr

AS PART of the Pacific Coast Gas Association's spring schedule of section meetings and utility-manufacturer councils, four well-attended sessions were held in Los Angeles between February 14 and March 1.

These included a 2-day session February 14-15 of the accounting section on commercial problems; a 1-day meeting February 20 of the Range-Refrigerator Council; a 1-day session February 21 of the water heater council; and a 2-day meeting February 28-March 1 on home service subjects.

Largest of the meetings from the standpoint of attendance from all sections of the Pacific Coast were the manufacturer-utility conferences of the Range-Refrigerator and the Water Heater councils, held on successive days February 20 and 21 in the auditorium of the Southern California Gas Co., Los Angeles.

The Range-Refrigerator Council session drew an attendance of 50, composed of 27 representatives of five California, Oregon and Washington utilities, and 20 representatives of 14 range, refrigerator and appliance manufacturers. Present also were W. H. Vogan, director, A.G.A.'s Los Angeles testing laboratory; and Clifford Johnstone, San Francisco, managing director, PCGA.; Robert Crosby, Southern California Gas Co., headed the local arrangements committee and J. E. Kern of the same firm served as conference chairman.

A definition of the objectives of the PCGA's council plan of utility manufacturer conferences and an outline of future activities were submitted by W. M. Jacobs, Los Angeles, general chairman of the association's committee on improvement of gas utilization equipment. Chairman Kern next presented a report of current and contemplated activities of the A.G.A.'s domestic gas range committee.

CP Promotion Discussed

Mr. Kern offered a review of previous results of CP gas range promotion, at the conclusion of which he called for discussion of factors affecting future CP promotional efforts.

Open forum discussion on this subject elicited the following comment:

That a pilot filter should be regarded as a necessity and should be included as part of a CP range program, preferably in the form of a uniform type of filter.

That certain legal points are involved in the filter question because range manufacturers, proposing to include a filter in their ranges, would find that all types of filters prescribed by CP regulations are controlled by patent.

That objections to filter requirements are based on the fact that many aspects of pilot filters are still unknown quantities.

That any general statements implying that all ranges burning manufactured gas need gum filters are erroneous, because some gas companies supply "clean" gas.

Some discussion at the morning session was had on the subject of how electric competition in selling gas ranges and refrigerators to building contractors for installation in multiple housing projects can be met by the gas industry.

Trend Toward Multiple Sales Noted

Some of the questions prompted by the apparent trend toward multiple purchases of gas appliances, which were discussed in open-forum style, were:

A.... What has been previous trade practice among gas appliance manufacturers in selling appliances direct for installation in large multiple dwelling units?

B.... In what quantities will gas appliance makers plan to sell gas ranges and refrigerators direct to building contractors, and others, for installation in such residential and multiple housing projects?

C.... Can such sales be co-ordinated with normal retail trade?

D.... What safeguards are needed to prevent diversion of equipment into unauthorized channels?

E.... Will manufacturers have local personnel available to handle anticipated contact and sales requirements for this class of business?

F.... How will warranty and service obligations be handled on such sales?

G.... What assistance from the gas utility is needed by manufacturers who elect to sell direct to building contractors?

H.... Should gas utility field salesmen, contacting such builders, quote prices on direct wholesale sales made by manufacturers?

The importance that the question of multiple sales is assuming was emphasized by J. L. Hall, Southern California Gas Co., who reported that of 12 builders in Southern California with whom he discussed the matter recently, 11 disclosed they intended to supply gas appliances with the homes they build after the war.

Speculative Builders

The big postwar problem, as viewed by Mr. Hall, will be speculative builders who will buy gas ranges and refrigerators in multiple lots for housing projects.

Another angle was injected into the discussion with the disclosure that the Los Angeles County Housing Authority has purchased gas ranges and refrigerators in wholesale lot for installation in some of the low-cost housing projects the County Housing Authority has sponsored.

W. M. Jacobs, Southern California Gas Co., expressed the opinion that the gas industry must be prepared to face the fact that builders of large-scale housing projects definitely propose to supply appliances with their postwar houses.

Other speakers cited the government's declared purpose of providing better housing for low-income people after the war, if private industry does not do so. Gas ranges, laundry machines, water heaters and dishwashers will be among the appliances needed for such homes, the speakers pointed out. The gas industry, therefore, they asserted, is faced with the direct problem of working out a plan of how the sale and distribution of multiple orders for appliances for such projects shall be handled.

Package Gas Kitchen Needed

To supply this forthcoming market, various delegates stressed, the electric industry will offer complete kitchens with built-in electric appliances, which will be made available to mass housing constructors on a wholesale price basis.

The gas industry, it was emphasized, must be ready to meet this challenge by the electric appliance manufacturers by offering to the builders gas appliances of comparable quality, or an entire package-unit gas kitchen, on a wholesale price basis, or be handicapped in seeking this type of business.

Train Kitchen Installers

Promotion of co-ordinated gas kitchens was cited as an indirect method of promoting gas appliance acceptance in general. The day is gone, it was stated, when the gas industry can overlook an all-gas kitchen as a vital part of the appliance business.

The practical problem now facing the gas industry, the delegates emphasized, is how to turn the mass of discussion and effort already devoted to promoting a post-war kitchen into actual sales.

"After you have the design and the plan for selling an all-gas kitchen, where do you go from there?" was the challenging question posed by Mr. Jacobs of the Southern California Gas Co.

He added it would virtually be impossible to expect every appliance dealer to handle all-gas kitchens. He cited also the problems incidental to installation that are sure to arise. Such a kitchen, Mr. Jacobs declared, will involve plumbing, electric work, linoleum, wallpapering, painting, etc. The new-home contractor, he pointed out, can sublet such jobs to subcontractors, but a problem still to be solved is how such installation work is to be handled for all-gas kitchens sold through dealers.

Some effective program for installing all-gas kitchens must be worked out, in Mr. Jacobs' opinion, particularly in cases where old kitchens are converted into modernized all-gas kitchens.

Tie-in With Contractors

A workable tie-in with building contractors on appliance sales is one of the key problems of the gas industry, in the opinion of several of the delegates.

As B. W. Reynolds, Pacific Gas & Electric Co., San Francisco, views the matter, the big market for gas appliances for some time after the close of the war will be in mass-housing projects. The range manufacturers must decide, he declared, whether to be content with replacement business by selling one range at a time to a casual purchaser, or to share in the vastly broader merchandising field that is clearly indicated by the trend toward multiple appliance sales and package kitchens.

Other views submitted during this discussion were:

That the retailer apparently will have difficulty competing in the mass-housing gas appliance field against the wholesaler and manufacturer.

That if direct selling policies on appliances are introduced by electric appliance manufacturers, the gas industry must follow suit.

That gas appliance manufacturers must give serious thought to the tremendous remodeling market in prospect for the postwar period.

That quality of appliances will deteriorate if the manufacturers of high-class products refuse to sell to builders and leave that market to fly-by-night manufacturers.

That direct selling of appliances is inevitable.

That dealers must be trained to adopt a new viewpoint on appliance sales by directing their efforts toward selling a $2,000 complete kitchen rather than a single appliance at $60 or $100.

That the postwar mass construction market for ranges will eventually stabilize in a demand for a good quality, attractively designed, fairly priced article, rather than for a low-priced range, because housewives, on the whole, have become accustomed to good ranges and builders will respond to that demand rather than lose the sale of the house.

That even if ranges were sold direct to builders in wholesale lots, there would be an asset to the neighborhood gas appliance dealer in the fact that gas ranges form part of the equipment of a large housing development.

Discussion at the afternoon session brought forth the conclusion that the question of who should handle multiple appliance orders—the utility, manufacturer, distributor or dealer—will probably meet the gas indus-

Group of 54 gas industry executives representing five Pacific Coast utilities and 14 manufacturers of gas ranges and appliances who attended the Gas Range & Refrigerator Council conference hold a round-table discussion of problems affecting manufacturers and utilities.

At speaker's table are (seated, facing audience) Homer Larkin, O'Keefe & Merritt; J. E. Kern, Southern California Gas Co., conference chairman; and (standing) J. L. Hall, Southern California Gas Co., who is outlining his views on what the public probably will want in the way of postwar gas appliances.

try head-on about 60 days after the close of the war.

Chairman Kern announced that the gas companies have no desire to disrupt present sales and distribution channels of the manufacturers, but since the trend toward a change in policy is apparent, the subject was considered timely for laying before the council for discussion.

Co-ordinated Dimensions Needed

A discussion on kitchen planning was introduced at the February 20 afternoon session by Frank Moon, supervisor of the home planning department, Southern California Gas Co.

"Co-ordinating the dimensions of ranges and kitchen cabinets is another of the problems to which the manufacturers and their designers must give early consideration," Mr. Moon said. If sizes of units vary, too many spacer strips must be used to fit an off-size range or cabinet into a kitchen. Mr. Moon then outlined some ideas on modular design of kitchen units.

In the general discussion which followed, opinions were offered to the effect that insofar as design is concerned, there probably will be little difference between the pre- and postwar kitchens, with the postwar model possibly being more streamlined and containing more color, but, on the whole, representing no radical design changes.

Mr. Reynolds, PG&E, suggested, that as a means of simplifying sale and distribution, experienced installers of co-ordinated gas kitchens be established in major communities.

Among the companies represented at the Range and Refrigerator Council session were:

Pacific Gas & Electric Co., Portland Gas & Coke Co., Seattle Gas Co., Southern California Gas Co., Southern Counties Gas Co., Servel, Inc., James Graham Mfg. Co., General Controls Co., Western Stove Co., O'Keefe & Merritt, Gaffers & Sattler, George D. Roper Corp., Grayson Heat Control, Ltd., Glenwood Range Co., Standard Gas & Equipment Co., Utility Appliance Corp., Robertshaw Thermostat Co., American Stove Co.

Water Heater Council Meets

The Gas Water Heater Council of the PCGA met in all-day session on February 21. Attendance was 49, representing five gas utility firms and 20 water heater, valve and appliance manufacturers. Clyde H. Potter, Southern Counties Gas Co., was council chairman, and Claude Ballinger, Republic Heater Corp., co-chairman.

Following announcement by Chairman Potter of the recent death of Ralph L. Bailey, Pacific Coast representative, Whitehead Metals Products Co., and a member of the PCGA, the council adopted a resolution of sympathy addressed to Mrs. Bailey, which was signed by all the delegates.

The subject of certified performance water heating was discussed in a lengthy open-forum session. The subject was introduced by Chairman Potter with the explanation that since it appears that eastern water heater manufacturers may recommend adoption of a CP water heating plan similar to and patterned after the successful CP range program, it seemed timely to permit the council delegates to discuss the subject from the standpoint of promotional value to the industry, usefulness, responsibility of inspection, and other aspects.

At the conclusion of a three-hour debate, the council unanimously adopted a resolution to the effect that the AGA CP committee be advised it is the opinion of the PCGA Water Heating Council that no promotion of a CP water heater program be released until the entire program has been completed and all sectional objections satisfactorily adjudicated; and that, in any event, the program not be introduced until after the close of the war.

Postponement of CP Plan Urged

Opinion of the delegates largely was that while a certified performance water heating program would be of undoubted benefit to the gas industry, the present was not a propitious time for inaugurating it. It was emphasized, however that

(Continued on page 30)

This group of 65 utility and manufacturer representatives at an all-day session of the Gas Water Heater Council.

Seen at speaker's table in background (left) are left to right, R. E. Honey, Southern California Gas Co., secretary of council; Claude Ballinger, Republic Heater Corp., Los Angeles, co-chairman; and (standing) Clyde H. Potter, Southern Counties Gas Co., chairman.

In the group are 32 representatives of 20 gas heater and appliance manufacturing firms, 31 representing five west coast gas companies, one representing the A.G.A. Laboratory, two P.C.G.A. executives and a representative of the AMERICAN GAS JOURNAL.

1300 Gas Executives start full, industry-wide

wheels turning to help assure employment after the war

Utilities from coast to coast register in Servel's Salesman Selection Training Clinics

The Salesman Selection and Training Program, developed by Servel, Inc., and sponsored by the A. G. A., was introduced to the Gas Industry at 10 key-city meetings only a short time ago. But already it is in full gear—thanks to the 1300 company officials, sales managers and supervisors who attended these meetings. Impressed by the completeness of the program, a large number immediately signed up their companies for the second part of the program—The Salesman Selection Training Clinic. Today, more than 100 Gas Companies, representing over nine million domestic meters, have already registered.

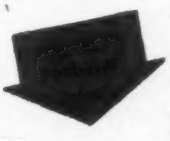
Preparing for New Product Opportunities

By entering into this program, these key companies are preparing now to assure full post-war employment in the Gas Industry. More than that, they are arming for the coming "battle of the fuels." They are getting ready to take advantage of the new products which Gas Appliance Manufacturers will provide after the war. Already, many new and better appliance designs have been approved for production. Test models of others are rapidly being developed.

But new and improved products cannot do the job alone. Gas Companies must be *ready* to sell and merchandise these products to the public. They must be *ready* to get the jump on competition. This will call for a tremendous sales effort and will require a competent staff of trained salesmen.

Selection Program Builds Sound Sales Force

The Salesman Selection Program is designed to help sales managers build up their forces to the strength required for this huge sales effort. To train sales managers in the use of this program, a series of two-day clinics will be started within the next few weeks. Sales managers attending these training clinics will not only receive the tools to help select the best available salesmen, but also will acquire the knowledge to effectively put these tools to work. For each sales manager will have the chance to try out what he learns—right at the session—by interviewing typical applicants.



SIGN UP NOW

Registrations for these clinics should be addressed to R. E. Williams, Chairman, Committee on Selection and Training of Domestic Sales Personnel, American Gas Association, 420 Lexington Ave., New York City. Or write to any regional office of Servel, Inc.

SERVEL, INC. EVANSVILLE 20, INDIANA

while the program ought not be initiated until *after* the war, mapping of the plan should proceed *now* so that the differences of opinions on phases of the program now prevailing can be ironed out and a completed plan, ready for presentation to the public, be available as soon as hostilities cease.

Claude Ballinger, co-chairman, reported that the Manufacturing Section of the PCGA has expressed itself in favor of developing a competent CP water heater program, but considers that the war and manpower situations at present make it advisable to defer definite action on approval or acceptance of CP until conditions in the industry are more stable.

William Hoyt, Day & Night Mfg. Co., expressed himself in favor of the principle of CP for water heaters, but stated that ". . . perhaps now is not the right time to inaugurate it."

Prepare Plans Now Urged

R. V. Davis of the A. O. Smith Corp., was among those who felt that it is not too early to prepare plans for a CP program, although actual action in promoting it publicly should be deferred until the war's end.

W. M. Jacobs, Southern California Gas Co., said:

"There was a definite need for a CP range program because the industry needed something better than the Blue Star label. But whether there is a similar imperative need for a CP water heater program is still subject to discussion."

Mr. Jacobs inferred that while many in the industry see the need for improvement in the water heater field, hasty action in the preparation and adoption of a CP program would result in an inadequate setup which, possibly, would be lacking in many respects to meet changes in the water heater picture that may come after the war.

He stated moreover that he saw in a CP water heater program the answer to a serious servicing problem. In the past he explained, all too many inferior water heaters were installed in new homes, which resulted in an over-proportion of servicing by the utilities.

The definite need of a label, such as "CP," to identify a quality water heater to the public was stressed by other speakers, who pointed out that at present it is virtually impossible for a prospective buyer to determine a good water heater from a bad one.

Grading Recommended

L. S. Ingram, Coleman Lamp Co., offered the suggestion that a system of grading the quality of gas water heaters be used, with colored tags or metal plates to identify 1st, 2nd or 3rd class heaters.

One manufacturer reported his firm has complete plans for a new water heater model in its files but has decided to defer all action on it until a CP program either has been adopted or definitely rejected by the gas industry.

B. W. Reynolds, PG&E, expressed the opinion that in the postwar period the life of a water heater would be of paramount importance, probably serving as the measuring stick of service. He suggested that any heater carrying the CP label should definitely have a long-life tank. Promotion of a CP water heater program, however, in Mr. Reynolds' opinion, should not be initiated until after the war. He pointed out also that automatic washing machines, dish washers and other appliances will enjoy greater use after the war, which will make increased demands on the water heater. Sizing, therefore, according to Mr. Reynolds, is a local problem, and should not be bound by any rigid national sizing system.

Various other delegates concurred with Mr. Reynolds, stating that sizing must be given careful consideration in the CP plan, with due allowance accorded the fact that no sizing regulation can be made applicable to all sections of the country.

Wayne R. Smith, Continental Water Heater Co., also emphasized the vital importance of proper sizing requirements. A 20-gallon water heater, he pointed out, might be suitable in one locality, but entirely inadequate in other areas.

In expressing himself in favor of the main principle of CP for water heaters, Robert Felton of the H. R. Basford Co. urged that sizing be regulated to meet sectional requirements.

Indorsing the main objectives of certified performance for water heating, Arthur Dolan, Hoyt Heater Co., recommended that plans be readied now for use after the war. Sizing, he declared, should be given most careful consideration in view of the fact that if minimum capacity prescriptions are made too low, the increased use of water in the home after the war would render a CP sized heater inadequate within a short time.

Committee to Draw Sizing Chart

Indicative of the importance the Water Heater Council attached to proper sizing, a motion was adopted that a committee of manufacturer and utility representatives be appointed to draft a gas water heater sizing chart, which is to be issued under the name of Pacific Coast Gas Association Sizing Chart. Appointment of the committee was delegated to Chairman Potter.

On the subject of improved appearance of water heaters, various manufacturers conceded the need for improving the appearance of units after the war by streamlining exteriors, concealing working parts, correcting control deficiencies, etc. A more attractive, streamlined heater, it was admitted, would be easier to sell.

Standardized Shell Diameters

Discussion on the subject of standardization of heater shells elicited the unchallenged comment by several manufacturer and utility representatives that a standardized heater would be impractical because the spaces in homes into which water heaters must be fitted are not of uniform size.

Firms represented at the Water Heater Council session were:

Portland Gas & Coke Co., Seattle Gas Co., Pacific Gas & Electric Co., Southern Counties Gas Co., Southern California Gas Co., Mission Water Heater Co., General Water Heater Co., Whitehead Metal Products Co., Republic Heating Corp., General Controls Co., Columbia Steel Co., Southern Heating Co., Utility Appliance Corp., Continental Water Heater Co., Titan Valve Co., Coleman Lamp & Stove Co., H. R. Basford Co., Crane Co., Rheem Mfg. Co., Hoyt Heater Co., A. O. Smith Corp., Day & Night Mfg. Co., Grayson Heat Control Ltd. and Naco Mfg. Co.

Accounting Section

The Accounting Section of the PCGA held a 2-day conference on commercial problems February 14 and 15. Twenty-six accounting department executives of nine utilities in California, Oregon and Utah attended, representing the following firms:

Mountain Fuel Supply Co., Salt Lake City, Utah; Coast Counties Gas

and Electric Co., Santa Cruz, Calif.; California Electric Power Co., Riverside, Calif.; Pacific Gas & Electric Co., San Francisco; San Diego Gas & Electric Co., San Diego, Calif.; Portland Gas & Coke Co., Portland, Ore.; and Southern California Gas Co., Southern California Edison Co. and Southern Counties Gas Co., Los Angeles.

J. W. Vanier, Southern California Gas Co., as chairman directed a round-table discussion on a comprehensive program embracing problems related to customer relations, selection and training of public contact representatives, agencies operated by non-company personnel, collection practices, meter reading and other subjects.

Pointing out that the plan for holding periodic section meetings during the course of the year had been originated by the accounting section, Mr. Vanier declared that the success experienced by the PCGA with such conferences led him to the conviction that much activity along that line will continue even after general conventions are resumed.

The two-day sessions in February were devoted largely to presentation of expressions of opinions on how the various utilities handled such miscellaneous matters as company personnel in major metropolitan areas where immediate service is available; in suburban and rural districts and branch offices of metropolitan areas; facilities and personnel for handling service to the public on a 24-hour basis.

Discussed also was the subject of agencies operated by non-company personnel and the policies of various utilities on selection of collection or order taking agencies. This was followed by a general discussion on policy governing deposits and provisions by which customers may obtain service with a minimum of inconvenience.

War Changed Hiring Techniques

How the manpower shortage has made it necessary to make changes in personnel department techniques to allow for the new applicant-employer relation created by the war emergency was discussed at length.

It was pointed out that too much pre-hiring discussion by personnel directors on aptitude and physical tests, medical examinations, etc., is inadvisable because the job applicant may be "scared off." Representatives of several utility firms declared their companies had relaxed hiring procedure to meet present conditions, particularly as applied to mandatory physical examinations. One firm reported it now defers all physical examination for male applicants until the six-months probationary period has expired, and waves physical examinations for women entirely.

Home Service Conference

A two-day conference, programed as "The Home Service Work Shop," was held at Los Angeles February 28 and March 1 under the joint sponsorship of the Home Service Committees of the PCGA and the AGA.

An average of 45 to 50 directors and attaches of home service departments attended each of the sessions, representing utility companies in San Diego, Santa Cruz, Los Angeles, San Francisco, Calif. and Portland, Ore.

Miss Mercedes Bates, home service director, Southern California Gas Co. and chairman of the PCGA Home Service Committee, presided. Representing the AGA was Miss Colleen Fowler, chairman of the national association's Home Service Committee.

One of the features of the February 28 session was a three-hour round-table discussion of the various home service programs conducted by Pacific Coast gas companies during which 15-minute outlines of the activities of their respective concerns were presented by the following:

Margaret Bowman, San Diego Gas & Electric Co.; Thelma Fahrenkrog, Coast Counties Gas & Electric Co.; Rita Calhoun, Portland Gas & Coke Co.; Marguerite Fenner, Pacific Gas & Electric Co.; Katherine L. Rathbone, Southern Counties Gas Co.; and Grace Meyer, Southern California Gas Co.

A program outlining a home service refresher course was offered by Miss Katherine L. Rathbone, home service supervisor, Southern Counties Gas Co., together with presentations of practices by Miss Marjorie Fischer and Miss Martha J. Adcock of the same company.

Miss Colleen Fowler, chairman of the AGA Home Service Committee, gave a report of the AGA's plans and activities for home service.

Corfield Reviews Appliance Research

Guy Corfield, research engineer, Southern California Gas Co., presented a review of recent research pertaining to domestic gas appliances.

Mr. Corfield cited the need for a more effective interchange of reports between the research laboratories operated by gas companies in different sections of the country. He reported that a movement along that line is gaining headway.

His talk also included a resume of appliance research being carried on by laboratories in Kansas City, Mo., Brooklyn, N. Y., Washington, D. C., the Rochester Gas & Electric Co.; Peoples Gas, Light & Coke Co.; Institute of Gas Technology in Chicago; and the joint laboratory operated in Los Angeles by the Southern California Gas Co. and Southern Counties Gas Co.

Pattern for Training Offered

R. C. Terradell, supervisor, sales training, Southern California Gas Co., presented a talk under the title of "Pattern for Training Home Service Representatives." He offered suggestions on how such employees can be trained, and went into considerable detail on various aspects of the subject, such as laying out a general prospectus for training; preparing course material; visual, audio and other training aids; classroom facilities; curriculum, etc. Diagrams were distributed among the audience to illustrate classroom layouts, proposed record sheets, etc.

Kitchen Planning Discussed

Discussions keyed to the theme of kitchen planning predominated on the program of the second day's sessions, March 1.

Miss Margaret Fenner of PG&E discussed kitchen planning film and slides; Frank Moon, Southern California Gas Co.'s home planning bureau, talked on basic principles of kitchen planning. Kitchens of the future were outlined by Eileen Law, editor, *The Home Magazine*, Los Angeles *Times*. R. D. MacMahon, general supervisor, commercial sales, Southern California Gas Co., handled the subject of planning kitchens for homemaking instruction.

J. L. Hall, supervisor, residential sales, Southern California Gas Co., reviewed activities of the Home Planning Institute of Southern California; and W. M. Jacobs, chairman, Sales and Advertising Committee, P.C.G.A., discussed the American Gas Association's new Freedom Kitchen Program.

What Will Make Gas Generators Last Longer?

CRYSTOLON Brick are increasing the serviceability of water gas generators by giving exceptionally long lining life. Densely constructed of silicon carbide with a minimum of refractory bond, these brick are resistant to slag penetration, abrasion and high temperatures. Clinkers are easily removed from the dense surface of these brick — leaving the face of the brick clean and undamaged. **CRYSTOLON** linings not only stand up well for long periods of operating time, but also quickly pay for themselves by savings in cleaning costs alone.

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New Data on Design and Sizing of Automatic Gas Storage Water Heaters for Maximum Service Efficiency

By
H. Luoma

Chief Engineer, Domestic Gas Research
American Gas Association
Testing Laboratories

Principles involved in sizing of automatic storage gas water heaters for maximum service efficiency are discussed in light of new experimental findings. Results of additional tests to determine effectiveness of flue gas and hot water heat traps are presented. Methods for improvement of service efficiency of instantaneous type heaters are set forth. Possibilities for increasing service efficiency by means of two-stage heating and power burners are indicated.

PERFORMANCE of an automatic gas storage water heater from an efficiency standpoint can be evaluated readily in the laboratory by determining its thermal efficiency and heat input required to maintain stored water at a predetermined temperature. The thermal efficiency is actually a measure of heat transfer from the flame and flue gases to the stored water. Inasmuch as this test is normally conducted at the manufacturer's rated input, heat losses from the storage vessel during its performance are negligible when expressed as a percentage of the total heat input. Under conditions of standby, however, heat is continuously radiated from the exterior surfaces and losses become of appreciable importance when compared to the total heat input required to maintain the water at any given temperature.

Thermal efficiency of modern automatic gas storage water heaters has been developed to such an extent that normal design changes or expedients will not provide for a material increase. On the other hand if drastic changes in design are made, the resultant increase in thermal efficiency may be limited to some extent by the temperature of the flue gases. Too effective heat transfer will result in condensation of the flue gases, thereby creating a condition that is undesirable for obvious reasons. Consequently, in most instances attempts to increase overall or service efficiency by increasing the thermal efficiency to a theoretical maximum do not appear to be worthwhile. From the standpoint of improving the service efficiency of a heater during periods of standby, some benefits are to be derived from increasing its insulation, from incorporation of a storage vessel of optimum design, and from use of specific devices to eliminate circulation of air through the heater when not operating at full input rate. However, the foregoing expedients have been employed to a considerable extent in the construction of modern storage type heaters and further refinements may not be indicated as economically justifiable for the slight increase in service efficiency that can be obtained. Naturally it is not to be inferred that further improvement of service efficiency by application of commonly accepted design principles is not possible or should not be considered. Rather, it is intended that any other means by which this end can be accomplished should be thoroughly investigated. Such a means is suggested by the proper sizing of a heater for any given hot water requirement.

Under conditions of actual usage, the amount of water drawn from an automatic storage type heater influences to a considerable extent its overall efficiency. When the quantity drawn approaches that required to cause the heater to operate continuously at full input rate, the service efficiency approaches maximum; namely, the actual thermal efficiency of the heater. Conversely, when no water is drawn the service efficiency will be zero inasmuch as no useful work is performed in terms of normal delivery of usable hot water. It thus becomes apparent that it is of extreme importance to give as careful consideration as possible to the daily hot water quota to be supplied by a given heater.

Of course, the theoretical maximum in service efficiency may be obtained by sizing the heater for continuous operation at full input rate. This could be approached in practice by use of a heater with a very large storage vessel capacity and a low input rate. However, variations in demand for hot water during the day prohibit such design inasmuch as at peak demands or maximum withdrawals the heater would not be capable of supplying adequate hot water. On the other hand, if the input rate does not approach the minimum for a given storage vessel size, a substantial decrease in service efficiency may result.

Relationship of hot water demand to gas consumption is illustrated in Fig. 1. This graph (based on a 30 gallon heater having an input rate of 30,000 Btu per hr, a thermal efficiency of 75 per cent, and a standby loss of 7.3 per cent per hr) indicates that an input of approximately 1000 Btu per gallon is required to produce 3000 gallons of water per month at a 90 degree temperature rise. If this same heater is employed to provide only 1000 gallons per month, the input required is 1500 Btu per gallon. It is also evident from Fig. 1 that the input required increases at a very rapid rate when the daily demand of hot water is decreased further. This demonstrates conclusively that no improvements in heater design except those of a very drastic nature would provide for increases in service efficiency of the magnitude obtainable by proper sizing.

Several years ago the Laboratories made theoretical studies on the problem of determining the minimum input rates for any given storage vessel capacity which would give maximum service efficiency with any daily draw schedule selected. These data which are outlined in Research Bulletin No. 9, Fundamentals of Domestic Gas Water Heating, indicated that by proper sizing the service efficiency of an automatic storage water heater could very materially be increased for any particular daily hot water requirement. It was felt that these data were of sufficient importance to warrant studies of an experimental nature for the purpose of both confirming the theoretical findings and providing additional information on this important subject.

Eight contemporary automatic storage gas water heaters were employed in these experimental studies and under the following conditions of test. Room temperature inlet water was utilized with the thermostatic setting of the heater at 150 F, thereby producing a temperature rise of 80 degrees. The minimum input rate for any given daily demand was considered as that capable of delivering water at a temperature of 130 F. Various draw schedules ranging from 23 to 200 gallons for the 24-hour period were employed with individual draws made at a rate of 4½ gallons per minute. A complete series of tests was conducted on all heaters using a draw schedule that incorporated withdrawal of 60 per cent of the daily supply of hot water within a one-hour period. Such a schedule together with a reasonably rapid rate of individual draw represents a very severe service condition.

In Fig. 2 the results of these tests are represented graphically. From these data the minimum gas input rating for various automatic storage heaters required for producing water at a temperature of 130 degrees or higher for this severe draw schedule may be found. For example, the curve designated as "50" permits selection of a variety of input rate—storage vessel capacity combinations which will supply 50 gallons of water at an 80 degree temperature rise with a frequency and amount of individual draw called for in the above mentioned draw schedule. To illustrate further, this requirement could be met, for example, by a 20 gallon heater having an input rate of approximately 16,250 Btu per hr or a 40 gallon heater with an input of approximately 7500 Btu per hr. The upper broken line in Fig. 2 indicates the minimum storage vessel size which will supply the particular daily

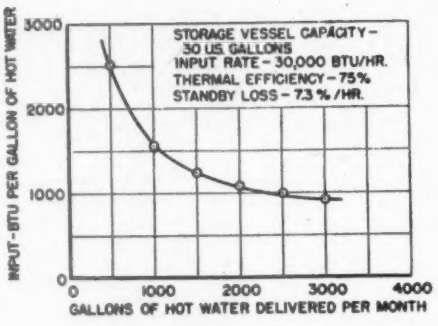

Fig. 1. Relationship of Hot Water Demand to Gas Consumption

draw indicated without necessitating the withdrawal of more than 80 per cent of the total amount of stored hot water in any single operation. The lower broken line represents approximately the practical minimum input rate as determined by test for various given storage vessel sizes. It may be that by careful adjustment of minimum input rate with respect to certain storage vessel sizes, this practical minimum might be lowered slightly. However, this would require adjustments that are far too delicate for practical consideration.

It was found that the experimentally determined relationship between the minimum input rate and storage vessel capacity confirmed the theoretical work previously done on sizing. However, the experimental results did indicate that, in general, input rates for producing a given daily quota of hot water were lower than those derived on a theoretical basis. This difference was more appreciable on heaters of large storage capacity. The slight difference between theoretical and experimental results can be attributed to the fact that some stratification of hot water occurred at the top of the storage vessel whereas the theoretical results

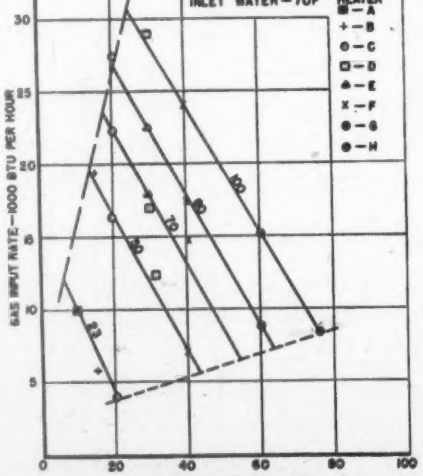

Fig. 2. Minimum Gas Input Rating of Various Sizes of Automatic Storage Heaters for Producing 130 F or Higher Outlet Water Temperature at Different Total Daily Draws

were based on the assumption that the cold inlet water thoroughly mixed with the stored water between successive draws. Obviously, stratification of hot water increases the capacity of a heater to meet conditions of heavy periodic draw. This effect of stratification becomes more pronounced as the size of the storage vessel is increased for the reason that larger quantities of stored water are available for carrying through any specific draw. Along these lines it should be mentioned that the experimental data presented on sizing in Research Bulletin No. 29 is primarily applicable to those types of storage vessels having inlet water connections designed to minimize mixture of stored hot water with incoming cold water.

The temperature of the inlet water to a heater is of importance in that it influences the cost of producing hot water and in addition is a prerequisite in the determination of proper size and input rating for delivering hot water at periods of peak demand. Series of tests conducted on heaters of varied storage capacity indicated that a decrease in inlet water temperature necessitated an increase in the required minimum input rating in order to provide adequate hot water. Furthermore, it was found that a definite relationship existed between the increase in minimum input rating and storage vessel capacity. For example, with heaters having storage vessels of 20, 30 and 40 gallons the amount of increase in input rating required was 7500 Btu per hr for an 80 gallon draw when the inlet water temperature was 50 degrees instead of 70. These tests were based on the severe schedule which provided for withdrawal of 60 per cent of the total daily draw in one hour. The fact that the increase in minimum input rating was the same irrespective of storage vessel capacity permitted the formulation of an equation by means of which the input to be added or subtracted to the minimum input rating given in Fig. 2 could be calculated. For the severe draw schedule this value is 470 Btu per degree F temperature change per 100 gallons daily draw. This value, of course, should be added to the given minimum input rating when inlet water temperatures lower than 70 degrees are available and subtracted when the inlet temperature exceeds 70 degrees.

As a result of these studies, tables giving the recommended heater sizes for specific hot water requirements and maximum service efficiency have been prepared for quick recovery service. These sizes are tabulated in

Research Bulletin No. 29 and are representative of optimum heater sizes where cost of operation is subordinated to high flexibility in meeting peak demands. A second series of recommended heater sizes was also prepared for slow recovery service where the cost of operation is considered of more importance than unlimited hot water supply. This was based on a draw schedule included in the Joint EEI-NEMA Test Specifications for Automatic Electric Storage Water Heaters. It is much less severe than the schedule which covers withdrawal of 60 per cent total daily demand in one hour's time.

The type of draw schedule employed has considerable bearing on the magnitude of the minimum input rating required to provide for any given hot water requirement. If the draw schedule is exceptionally severe, the minimum input rating required increases rapidly with the amount of the daily draw. For less severe schedules the effects of amount of daily draw do not assume the same importance. These statements are substantiated by the data shown in Fig. 3. It will be noted that as the draw schedule becomes less severe the increase in minimum gas input rating becomes less apparent as the daily amount draw is increased. In fact for an ideal draw over a long period and with sufficient time for recovery allowed between draws, the input rating required for any given total draw would be equivalent to the sum of the standby loss in Btu per hour and the average hourly input required to heat the water to a predetermined temperature. This ideal draw schedule is represented by the dotted line in Fig. 3.

Studies conducted to determine the efficacy of flue gas heat traps produced results that indicated such devices to be ineffective from a practical standpoint. For example, a 3 in. diameter flue pipe formed into a "U" shaped trap 24 in. deep indicated no discernible effect on standby loss. The height of the exit leg of the flue gas trap was adjusted to provide the same percentage of CO_2 in the flue gases as obtained under normal operating conditions. In this manner experimental results obtained were not influenced by any possible resistance to flue gas flow that might result from addition of this type of device to the flue outlet.

Results of previous studies on hot water heat traps presented in Research Bulletin No. 9 indicate that no appreciable benefits are to be derived from their use. It has been pointed out that these studies involved only horizontal pipe runs from heat traps and that some saving could be effected from the standpoint of service efficiency if vertical runs were employed. To simulate this type of installation a heater was equipped with 10 ft. of piping extending vertically upward from the hot water outlet in a manner similar to that of piping extending to the second floor of a dwelling. Standby losses and service efficiencies determined on a comparative basis, that is with and without the heat trap, disclosed that this type of trap possessed no great practical value. Small variations observed under different conditions were well within the range of experimental error and for that reason no specific recommendations can be drawn regarding their effectiveness. For example, the standby loss without the heat trap was 3.85 per cent and the service efficiency 62.2 per cent, whereas with the heat trap these

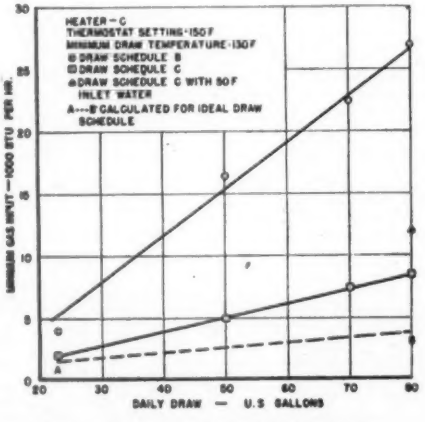
HEATER—C
THERMOSTAT SETTING-150 F
MINIMUM DRAW TEMPERATURE-130 F
DRAW SCHEDULE B
DRAW SCHEDULE C
DRAW SCHEDULE C WITH 50 F INLET WATER
A---B CALCULATED FOR IDEAL DRAW SCHEDULE
DAILY DRAW — U.S. GALLONS

Fig. 3. Effect of Type of Draw Schedule on Minimum Gas Input Rating

values were 3.60 and 61.1 per cent, respectively. It might be contended that the decrease in standby loss due to the heat trap, although only 0.25 per cent (actual), presents a worthwhile saving, especially when considered from the standpoint that additional small savings obtained by employing other design expedients would represent a sizable total saving. The fact of the matter, however, is that, singly, hot water heat traps do not produce the increase in service efficiency that is generally thought by many to attend their use.

Normally, storage type water heaters are constructed with metal to metal contact between the storage vessel shell extension and the bottom plate of the heater which is fastened to the legs and to the outer jacket. Elimination of this metal to metal contact can be effected by supporting the storage vessel on a steel plate which in turn is supported above the base plate by non-metallic plugs or supports. With the space between these plates filled with rock wool, not only is the storage vessel shell extension insulated from the outer jacket but radiation to the floor is lessened. Tests conducted on an experimental heater of this type of construction indicated that no decrease in standby loss was effected over that obtained with a heater of normal design in which the storage vessel shell extension contacts the bottom plate and which is equipped with the usual type radiation shield. It may be that if all metal to metal contacts such as pilots, thermostats, drain valves, relief valves, etc., are completely insulated so as to reduce radiation and conduction losses, the additive effect of these individual expedients would result in a material lowering of the standby loss. However, such design procedure is not economically feasible and tests indicate that any of the expedients singly do not effect any material saving.

The service efficiency of instantaneous type water heaters can also be materially improved by following certain operational principles. In contrast to heaters of the automatic storage type where reasonable variation in pilot rate has no effect on service efficiency, it is of importance to maintain the pilot burner of an instantaneous heater at as low a rate as possible consistent with satisfactory and safe ignition. Tests conducted on a coil type instantaneous heater indicated that for a 50 gallon daily draw an 8 per cent (actual) increase in service efficiency could be effected by lowering the pilot burner input rating from 850 to 300 Btu per hr. For greater total daily draws the increase in service efficiency became less for the reason that the amount of heat dissipated by the pilot when the heater was not in operation was proportionately less when compared to the total gas input rate. It is apparent therefore that instantaneous heaters employed for providing small daily hot water requirements should be equipped with pilot burners adjusted to a practical minimum. This is of more importance in such installations where frequent draws are made since additional dissipation of heat from the coils obviously takes place when they are heated at more frequent intervals.

An experimental heater incorporating principles for two-stage heating was constructed in order to determine whether any differences in service efficiency existed between this type of heater and the orthodox single-stage heater. This was accomplished by use of a small burner

having an input rating of 3000 Btu per hr and controlled by a graduating type thermostat in the location occupied by the snap-acting type normally supplied with the heater. The large burner was retained, ignition being accomplished by means of a safety pilot which was lighted through a flash tube leading to the small burner. The intermediate automatic pilot was added to the heater after initial experiments indicated that direct ignition of the large burner from the small burner by means of the flash tube arrangement could not be effected without appreciable delay. The location and setting of the thermostats were such that the heater would operate as much as possible on the small input burner with the large burner coming into operation only at times of peak demand, thereby providing theoretical conditions for attainment of maximum service efficiency. Results obtained from comparative tests on single and dual stage heating indicated that the service efficiencies were approximately the same. Of course, it should be emphasized that the single-stage heater was adjusted to the minimum input rating for that particular storage vessel size to give maximum service efficiency. It appears probable that any advantage that might accrue from a small burner operating at full input rating for the large share of the day is offset considerably by the increased heat losses that result from additional controls and burners required for two-stage heating.

A method for reducing heat losses during standby periods is provided by the use of a power burner ignited by an electric spark. With such an arrangement it is possible to seal the flueway at the bottom of the heater as no secondary air is required even during periods of standby. The higher thermal efficiencies obtained by this type of construction are limited in much the same manner as with heaters equipped with atmospheric burners; namely, necessity of avoiding condensation of flue gases if their temperature is reduced below the dew point. The flueway of the test heater was designed to accommodate a very low percentage of excess air and thereby prevent any excessive drafts through it during standby. By means of this arrangement the thermal efficiency of the heater was increased from 72.4 to 82.9 per cent and the service efficiency for an 80 gallon daily draw increased from 52.6 to 66.2 per cent. In addition to the fact that baffling of the flueway was such as to allow only approximately 5 per cent excess air, 2 in. of rock wool insulation were added to the bottom of the heater inasmuch as the burner was of a design which permitted installation in the flue.

It should be mentioned that even though the heat transfer to the stored water took place mainly through the walls of the flueway alone, the flue gas temperatures at the outlet were as high as 370 F, a value which does not present undesirable conditions from the standpoint of condensation. However, it would be expected that heat transfer through the flueway alone would be conducive to rapid liming and therefore a much lower rate of heat transfer after the heater has been in service. The power burner also suggests the use of 100 per cent burners in which the primary air is atmospherically injected. At the present time such a burner might not be feasible from the practical standpoint unless the heater were installed in territories where higher than ordinary gas distribution pressures are available. Nevertheless, an arrangement of this type does indicate promise inasmuch as it would be much less expensive both from the standpoint of initial and operating costs than a motor driven power burner.

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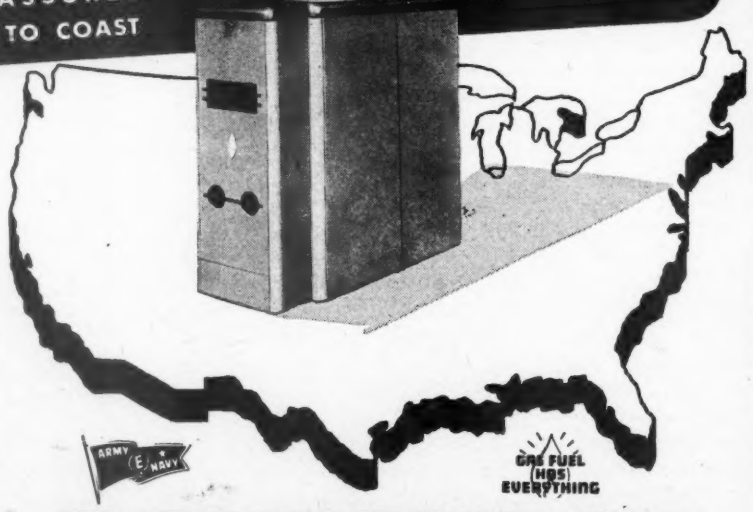

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This Handy Sales Chart Gives "Percentage of Mark-Up" for the Gas Industry

By

W. F. Schaphorst, M.E.

Newark, N. J.

It is not at all uncommon to hear conversations between appliance merchants along the following lines:

"I made a profit of 100 per cent on a range last week."

"Is that so? How did you do it?"

"I paid $50 for it and sold it for $100. My customer is tickled pink."

"You should be ashamed of yourself," retorts the friend. "You are engaged in a racket."

The surprised appliance dealer begins to think that maybe, after all, he *did* charge too much. We don't like to be told that we are racketeers.

However, he did *not* make a profit of 100 per cent. He merely *thought* he made it, not knowing that a profit of 100 per cent, in legitimate commerce, is impossible. His method of computing profits, although common, is decidedly *wrong*. I dare say that many business men are of the opinion that when they buy an article for $5 and sell it for $10 they make a profit of 100 per cent. But they don't. That method is incorrect because profits should be based on the *selling price* and not on the cost.

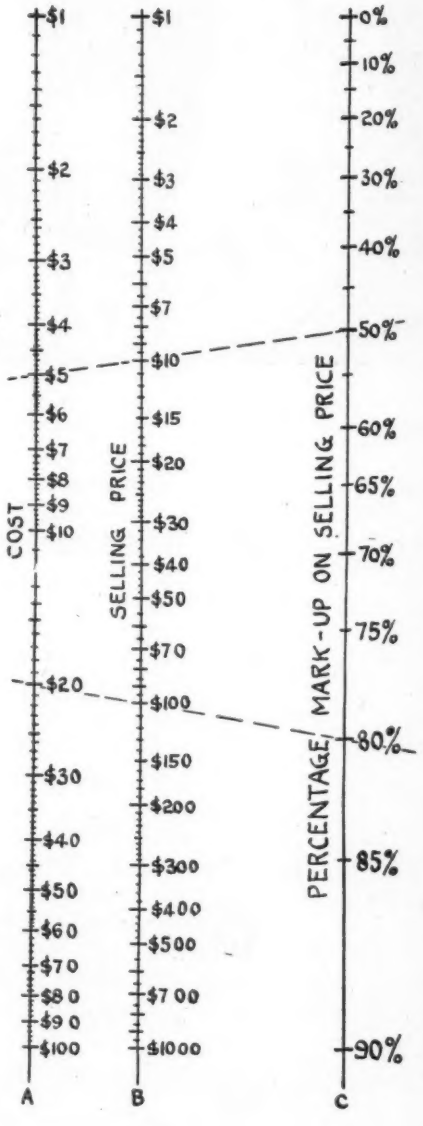
The accompanying chart was designed to help in making mark-up computations and to serve as a reminder that a profit of 100 per cent is utterly impossible. This is the way the chart works: To determine the correct percentage of mark-up, find the cost in column A and the selling price in column B. Run a straight line through these two prices and the intersection with column C gives the percentage of mark-up, or, as it is sometimes called, the "gross profit." Thus the upper dotted line drawn across this chart shows that if the cost is $5 and the selling price $10, the percentage of mark-up is 50 per cent.

The lower dotted line shows that if the cost is $20 and the selling price $100, the mark-up is 80 per cent.

The range of the chart is great enough to take care of almost any problem. Thus if the cost is $50 and the selling price $500 it will be found that the percentage of mark-up is 90 per cent.

Where the figures are higher than those shown in the chart it is merely necessary to add ciphers to the figures in columns A and B and the chart will take care of nearly any amount. Thus if the cost is $500 instead of the $50 mentioned in the last problem, and the selling price is $5,000, the same line through the $50 in column A and the $500 in column B gives the answer as 90 per cent. Or, again, if the cost is $5,000 and the selling price is $50,000 the same line, again, gives the percentage mark-up as 90 per cent.

Use the chart a few times, experiment with it, get acquainted with it, and you won't do without it in making future mark-up computations.



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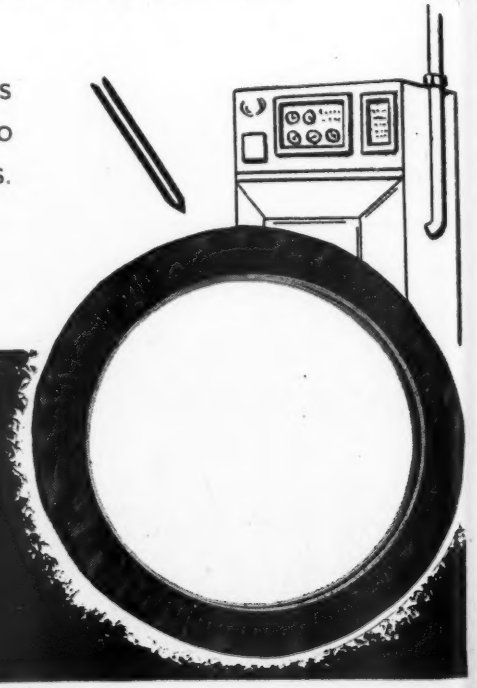

VULCAN PROOFING COMPANY

FIRST AVENUE & FIFTY-EIGHTH STREET • BROOKLYN 20, NEW YORK

Activities at A. G. A. Laboratories

Restoration of Laboratories Progressing Rapidly

Physical rehabilitation of the American Gas Association Testing Laboratories in Cleveland is well under way according to R. M. Conner, Director. He points out that numerous preliminary steps necessary before reconstruction could be started were completed more rapidly than had first been anticipated.

In view of the extensive damage suffered by the north wing of the building, it is considered remarkable that testing and research activities have been able to be resumed on their present scale. Fortunately the portion of the building housing war operations was little damaged by comparison so that these activities could be resumed on a full scale shortly following the fire. In addition to the offices, the range, central heating and accessory rooms, as well as the chemical laboratory, were all very severely damaged. With the exception of certain test and inspection records, correspondence and other files were completely destroyed.

"The splendid cooperation of all concerned have made the rebuilding task an easier one," Mr. Conner said. He was particularly appreciative of the assistance extended by President Robinson and The East Ohio Gas Company, without which reconstruction would have been greatly delayed.

The principal portion of damaged testing and research equipment has been either replaced or repaired. All gas, water and compressed air lines in the various test sections have been put back into service. New colored concrete floors have been laid in the portion of the north wing housing the test section and windows throughout the building replaced as necessary. Heating and plumbing facilities as well as electrical and telephone conduits destroyed by the fire have been restored.

New War Contracts Under Way

Aiding particularly the stepped-up Pacific offensive of the United Nations in the renewed drive to meet urgent war equipment needs, the American Gas Association Testing Laboratories are now making deliveries to the Army Air Forces of an improved type of automatic, continuous flow oxygen regulator for use in troop transport planes.

The regulators, designed and engineered cooperatively by the Laboratories and Alar Products, Inc., supply oxygen to airborne personnel at high altitudes such as those encountered in flying over the famed "hump" of Indo-China. Previous experience in supplying the original design under an earlier contract made it possible for the laboratories to undertake their new assignment in a minimum of time. Technical changes and refinements incorporated in the present model have resulted in improved performance and at the same time have been engineered so that complete interchangeability of parts with the previous design is possible, thus simplifying maintenance and servicing in the field.

Production Testing of Automatic Oxygen Regulators

In addition to the contract for these regulators, a second is being handled for the reinspection and retesting of regulators that have been in storage for one year or more. In preparation for both contracts it was necessary to design and construct equipment and facilities for testing and inspection and to train new personnel. New test benches for oxygen flow and for leakage were built and a new cold box designed for application of additional tests which call for performance checking under more severe operating conditions than was previously specified.

Through preparation of facilities and training of personnel for the reinspection contract, the Laboratories were able to start work on the new type regulator without delay, new designs and drawings having been prepared in advance. Likewise completed are a new service handbook and installation instructions for use of air-force personnel. Reports from former employees now in military service, who have seen these oxygen regulators in use, indicate that they are performing a vital function in the air of which we may well be proud.

Laboratories Engineers Promoted

Promotion of Kendall H. Flint and Herbert Luoma of the American Gas Association Testing Laboratories to the positions of Chief Engineer, Industrial Gas Research and Chief Engineer, Domestic Gas Research respectively has been announced by R. M. Conner, Director. At the same time all experimental and development work of the War Products department was placed under Mr. Luoma's supervision.

These promotions place the Laboratories in an excellent position to carry out their part in the newly expanded research program of the American Gas Association in an ef-

fective manner, automatically intensifying the emphasis on research throughout the industry. Recognition is also extended to experienced men who have carried out direct supervision of both gas industry and war products research during the past several years and played important roles in the accomplishments of the Laboratories in these fields.

Kendall H. Flint Herbert Luoma

Mr. Flint has been associated with the Laboratories for nearly twenty years and in that time has held responsible positions in every phase of their activities, having been connected with testing, inspection and research endeavors. He is a graduate of Amherst College and obtained his master's degree from Massachusetts Institute of Technology in the field of chemistry. All research activities pertaining to industrial gas, air conditioning, approval requirements and mixed gas will be conducted under his supervision.

Mr. Luoma joined the A.G.A. staff in 1939 following his graduation from the University of Wisconsin as an electrical engineer. He also has been connected with many phases of Laboratories' activities in testing, inspection and research, including three years at the Los Angeles Branch. For the past three years he has played a dominant role in the development of war products for the Army and Navy and the Office of Scientific Research and Development. As Assistant Chief Research Engineer he supervised experimental war contracts, a program which resulted in the development of fire control devices and automatic, continuous flow oxygen regulators for transport planes together with a number of other similar accessories.

New Mixed Gas Research Bulletin Planned

The Mixed Gas Research Committee, a joint committee of the Natural Gas Department and the Technical Section, is submitting to the gas industry for criticism new mixed gas research data, preparatory to publication of the findings in bulletin form.

Latest studies conducted by the American Gas Association Testing Laboratories staff under the sponsorship of the committee encompass substitution of gases with heating values ranging from 800 to 1800 Btu per cubic foot for three different base natural gases of high heating value, high methane content, and high gravity combined with high enert content, respectively. New interchangeability equations have been developed which take into consideration flash-back, lifting and yellow tip limits of adjustment and substitute gases. Mathematical methods of determining these characteristic limits have also been outlined. Graphical interpolations of formula factors, formerly complicated and time-consuming in calculation, will make possible complete solution of equations with nothing more than simple addition.

These new data when published will supplement previous mixed gas research studies on base manufactured gases to include mixtures of higher heating values as well as utilization of butane-air and mixtures of butane and city gases to meet fluctuating demands.

Southwest Personnel Conference of American Gas Association

The Southwest Personnel Conference of the American Gas Association held its eighth meeting March 6, in Shreveport, Louisiana. M. V. Cousins, Personnel Director of the United Gas Pipe Line Company, is the Chairman of the Conference. There were 17 members present, representing 9 companies, and the morning session was devoted to the discussion of Revised Selective Service Regulations, Foremanship Training, Wage Stabilization, and experiences with the War Labor Board.

The Conference was fortunate in obtaining C. V. Hussey of the Arkansas Power and Light Company, who discussed Job Analysis and Job Evaluation during the afternoon session. It was readily evident that Mr. Hussey had devoted much time and study to this vital subject and following his presentation of the mechanics of Job Evaluation and Analysis, the balance of the afternoon was devoted to various members directing questions to Mr. Hussey.

It was decided to hold the next meeting of this Conference in Shreveport and the Chairman advised the members present that he would furnish them with a notice in ample time as soon as he was able to secure confirmation from the hotel regarding reservation.

T. Leaming Smith Elected Director of U.G.I.

T. Leaming Smith, Vice-President of the Insurance Company of North America has been elected a Director of The United Gas Improvement Company to fill the vacancy caused by the resignation of William C. Dickerman.

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Primary Air Control Devices
Ability to Regulate Injection and to Resist Closure Due to Dust, Lint, and Grease

By
F. E. Vandaveer,
Supervisor American Gas Association Testing Laboratories

CONTROL of primary air is necessary on every Bunsen type burner to insure satisfactory flame characteristics. Excess primary air will cause flames to lift and blow from the burner ports or flash back. An inadequate amount will permit long, soft, possibly yellow tipped flames, resulting in carbon deposition and incomplete combustion. A device for primary air control may be either fixed or adjustable. It should be so constructed as to resist closure due to dust, lint and grease in order to maintain proper flame characteristics for a long period of time. To date, air shutters of various designs have been universally used for primary air control. In recent years, however, considerable attention has been given to use of alternate methods, largely with the thought that stoppages of air shutters by dust and lint could thus be avoided. With millions of Bunsen type burners employed on domestic gas appliances sold each year in normal times and the great variety of conditions of operation imposed on them, the importance of this phase of gas burner design is apparent. Accordingly, the Domestic Gas Research Committee authorized a thorough study of primary air control devices which resulted in publication of Research Bulletin No. 22. It supplies much valuable information for those interested in the manufacture, servicing and use of domestic equipment.

The practical value of Bulletin No. 22 will become more apparent as times goes on and peacetime production of gas appliances is resumed. For the first time a complete study and factual data on various methods of controlling primary air to atmospheric gas burners, applicable to gas appliances distributed on a national basis, has been made available. For those interested in knowing why primary air control is necessary, the facts are outlined and relative merits of adjustable and fixed air shutters discussed. A new design of adjustable butterfly type and wing type air shutters which eliminates the disadvantages and combines the best features of those tested is presented. For those considering an entirely new burner design to eliminate air shutters, the primary air injection characteristics, resistance to closure by dust and lint, noise of operation, and probable field experience of practically every known method of primary air control are given. These include such devices as countersunk orifices, double orifices, extended orifices, angle orifices, pressure reduction orifices, and various combinations of them.

Operating characteristics of most known devices for regulating primary air injection for atmospheric burners including air shutters, countersunk orifices, double orifices, extended orifices, angle orifices, pressure reduction orifices, and various combinations of them are presented. They are evaluated in terms of range of primary air control, noise in operation, susceptibility to closure by dirt etc., back pressure at mixer, and probably field performance.

Operational Principles

Gas burners are usually designed to perform satisfactorily over a range of operating conditions including variations in heating value and specific gravity of the gas distributed and the pressure at which it is supplied. Inasmuch as the primary air injecting abiilty of a given burner is proportional to the fourth root of the product of gas pressure and its density, it is evident that the burner must have adequate air injecting ability for the lowest combination of pressure and density of the gas on which it is to be operated. If the burner under consideration is to be utilized on natural and mixed as well as manufactured gases, it will be necessary to consider resultant wide variations in heating value. In this case air injecting ability of the burner must be sufficient to insure satisfactory combustion and flame characteristics at its designed rating with any gas on which it might be operated giving the lowest value for following expression.

$$\frac{\sqrt[4]{pd}}{\sqrt{h}}$$

Where:

p = gas pressure, in. of water
d = sp gr of gas (air = 1.0), and
h = heating value, Btu per cu ft

Since it is usually impracticable for a manufacturer to furnish burners designed for operation only on a specific gas supplied at a constant predetermined pressure, the alternative of designing for optimum primary air injection is generally followed. It is necessary, therefore, to provide means such as an air shutter with which primary air injection can be reduced below the inherent injecting capacity of the burner.

There are 3 basic methods of adjusting primary air flow; namely:

1. Flow restriction—as typified by conventional air shutters (Fig. 1). Other examples include use of obstructions in the burner throat such as an adjustable screw or a steel spring flap, or by an extended orifice.
2. Velocity reduction—as typified by the countersunk pressure reduction and double orifice devices shown in Figs. 2 and 3.
3. Energy reduction—as accomplished by the use of so-called angle orifices shown in Figs. 2 and 3.

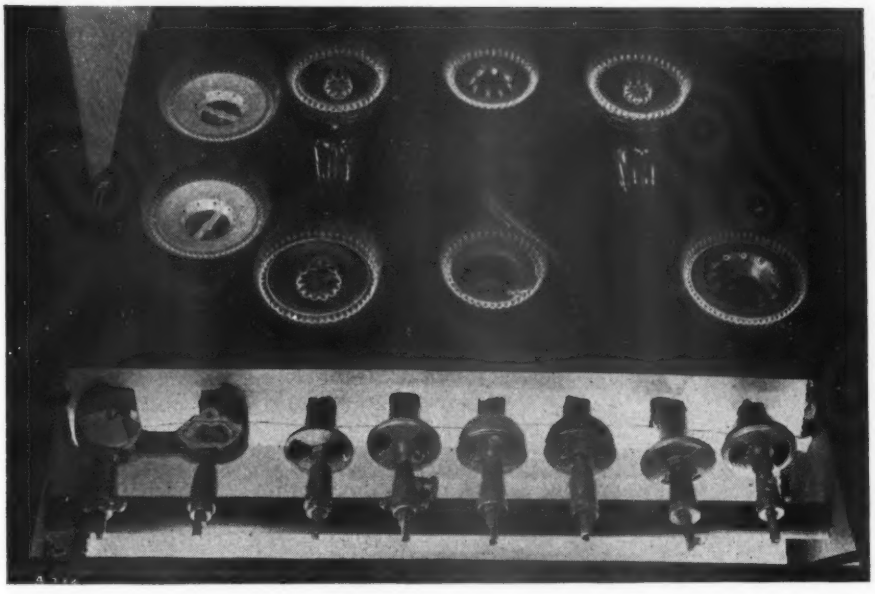

Fig. 1. Typical Air Shutters Mounted on Apparatus to Determine Their Susceptibility to Closure by Dust and Lint.

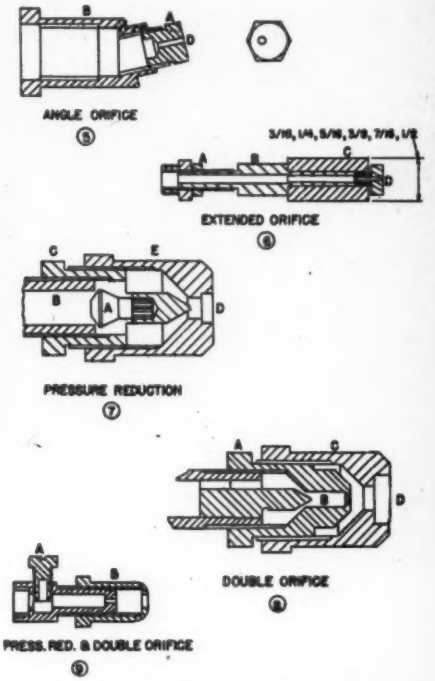

FIG. 3—Commercial Primary Air Control Devices.

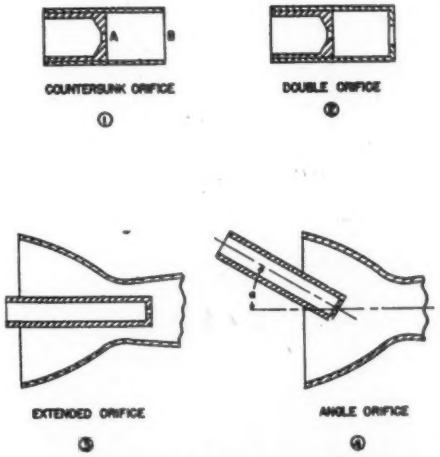

FIG. 2—Experimental Primary Air Control Devices.

Primary Air Injection and Regulation

All devices studied as illustrated in Figs. 1, 2 and 3 were found to provide an adequate range of primary air injection for normal field conditions of gas service. Angle type orifices gave the most limited range of satisfactory operation although this tendency could be overcome by correlated mixer tube design. For those considering the use of countersunk orifices a number of curves are given showing the effect on primary air injection of depth of countersink, distance from orifice to throat, inside diameter of countersink, and variations in depth and diameter of countersink. For those studying the use of double orifices the effect on primary air injection of distance between orifices and diameter of outer orifice, distance between orifices and depth of countersink, variations in distance between orifices and varying size and shape of outlet orifices a number of curves are presented. Similarly on extended orifices complete series of primary air injection curves are given showing effect of variations in spud diameter and distance from orifice to throat, outside diameter and rate per sq in. of port area, and variation in throat diameter and spud diameter. For those interested in angle orifices characteristic primary air injection curves are shown including effect of variation in orifice angle and throat diameter, orifice angle using manufactured and natural gas with various input rates per sq in. of port area and adjustment ranges available for natural and manufactured gases using 12 different burners.

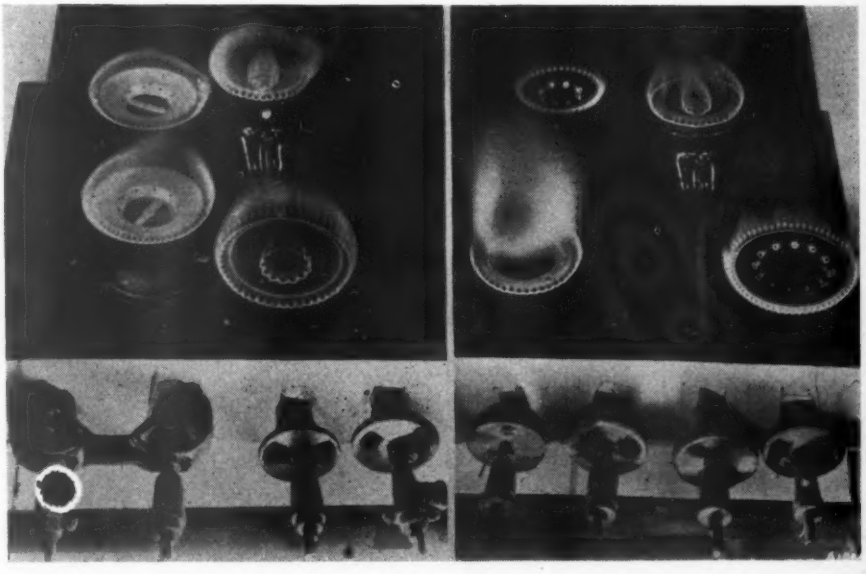

Fig. 4. Dust and Lint Test Assembly Showing Flame Characteristics and Dust Accumulation After 1½ Hours of Operation with Grease Sprayed on Mixer Faces at 30 Minute Intervals.

1. Wing Type Air Shutter
2. Spring Steel Strip
3. Extended Orifice
4. Double Orifice
5. Annular Opening Air Shutter
6. Circular Opening in Mixer Face
7. "Butterfly" Type Air Shutter
8. Pressure Reduction Orifice

Susceptibility to Closure

Seven primary air control devices (including 2 air shutters) were attached to the mixer faces of contemporary gas range top burners mounted on a specially constructed dust box (Fig. 1). The closed mixer face of the 8th burner shown in this test arrangement was provided with a fixed circular opening of 7/16 in. diameter to permit entrainment of primary air.

Fig. 4 shows the flame characteristics of these burners and the accumulation of dust on the burner mixer faces after 1½ hrs of operation with dust and lint-laden air directed into the primary air compartment while burner mixer faces were sprayed with melted cooking fat at one-half hour intervals.

It will be noted from the conditions of the flames depicted in Fig. 4 that units 5 and 7 (annular and butterfly type air shutters, respectively) evinced the effects of dust accumulation, the extent of accumulation being most notable in unit 5. Very slight softening of the flames in all other units excepting 6 (circular opening in mixer face) and 8 (pressure reduction orifice) was also evident.

A view of the photograph taken after 5½ hrs of operation (Fig. 5) reveals that only 2 units were injecting adequate primary air. These were units 4 and 8, having primary air control devices of the double and pressure reduction orifice types, respectively. It has been necessary to discontinue the test on unit 2 shortly after 3½ hrs of operation because of continued propensity for burning gas to be discharged from the mixer face. After 9½ hrs of operation all units entrained only a very small percentage of primary air required for satisfactory combustion.

The fixed 7/16 in. diameter circular opening in the mixer face seemed to resist closure better than any other type of primary air control device. It is important to note, however, that all primary air supplied to the burner was aspirated through that fixed opening. The air shutter designed to admit air through a circumferential annular opening between the outside perimeter of the mixer face and the perimeter of the air shutter seemed to be the most susceptible to closure of any device studied. Performance of this type of air shutter is considered to be indicative of the performance to be expected from any type of air shutter in which the opening provided for normal operating conditions has an extremely high ratio of perimeter to area or, in other words, an opening approaching a relatively long, extremely narrow slot.

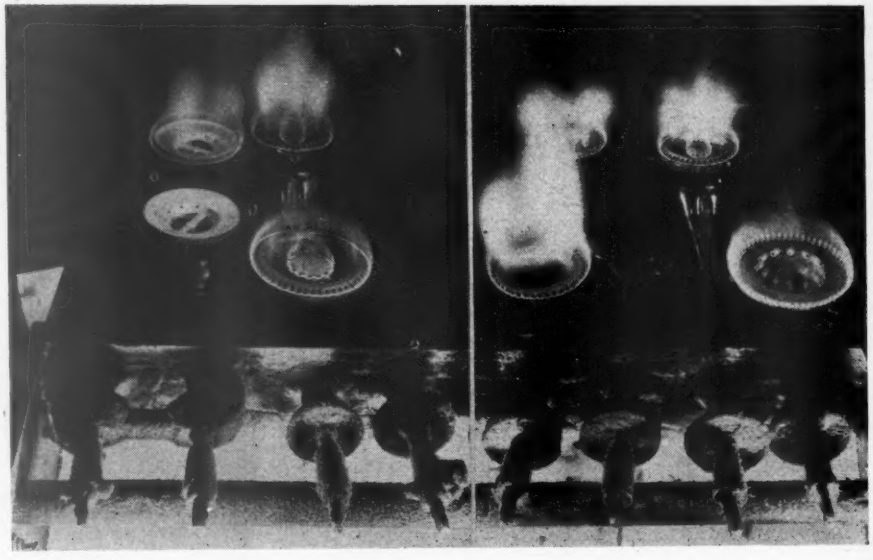

Fig. 5. Test Assembly Shown in Fig. 1 After 5½ Hours of Operation.

The various orifice devices gave performance intermediate between the 2 extremes just discussed. It would seem from these tests that the pressure reduction orifice should provide greater freedom from stoppage in service than any of the other orifice devices studied. For specific conditions of dry dust and lint, and dust and lint sprayed with grease the extended orifice and angle orifice respectively would seem to be preferable to the other orifice devices. The countersunk orifice could be considered as being distinctly inferior in this respect. The performance of the other types of orifices was nearly comparable.

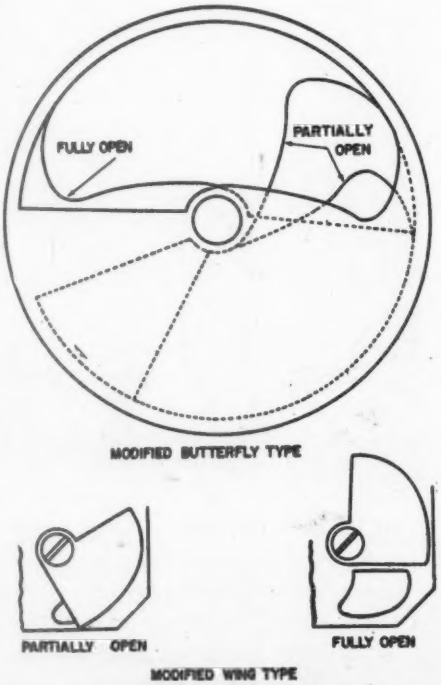

Fig. 6—Suggested Air Shutter Design Providing Approximately Circular Opening Near Point of Closure.

Results indicate rather conclusively that air shutters constructed so as to fit tightly against the mixer face and providing a single opening approximating a circle should yield good performance under field conditions. Two air shutters, one of the wing type and one of the butterfly, which maintain almost to the point of closure an opening roughly approximating a circle, are shown in Fig. 6. Assuming that manufacturing practices will permit fitting of parts to eliminate almost entirely the possibility of leakage, air shutters constructed along the lines shown in Fig. 6 should give reasonable freedom from closure by dirt deposition under service conditions. It should be observed that the openings provided by these 2 shutters for various adjustment conditions give relatively low values for the ratio of perimeter to area. The optimum ratio is of course provided by a circular opening.

In the event that for practical reasons tight-fitting air shutters cannot be employed, it seems that recourse to orifice devices would be beneficial. Many such devices except the countersunk type should, as previously indicated, yield satisfactory field performance from the standpoint of resisting closure by dust and lint.

Noise of Operation

Tests for noise of operation were made on all primary air control devices as shown in Fig. 7. Curves showing intensity of noise as presented in Bulletin No. 22 indicate that countersunk orifices operate reasonably quietly, extended orifices were most quiet in operation, and angle orifices were not considered objectionable although the noise level increased as the angle between orifice and centerline of injection tube increased. On the contrary the noise level of a double orifice approached 70 decibels (equivalent to typewriter noise) as outer orifice is decreased.

When all practical and theoretical factors are considered it is believed that an adjustable primary air shutter providing approximately circular openings down to nearly the point of closure and which does not permit air leakage between the shutter and mixer face or between shutter and orifice fitting is most satisfactory on appliances designed for general national distribution. When tight fitting air shutters are not commercially practical, or in locations of excessive dust and lint, or for use with gases combining high specific gravity and low heating value, supplied at reasonably high distribution pressure, properly selected primary air control devices should provide satisfactory service.

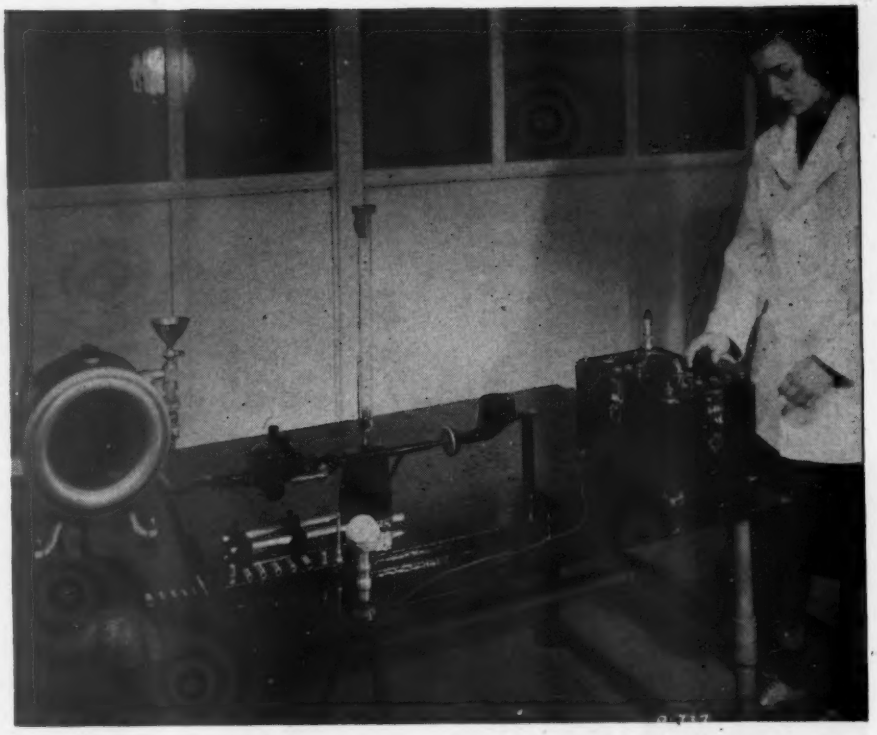

Fig. 7. Test Equipment Employed to Determine Noise Characteristics of Various Types of Primary Air Control Devices.

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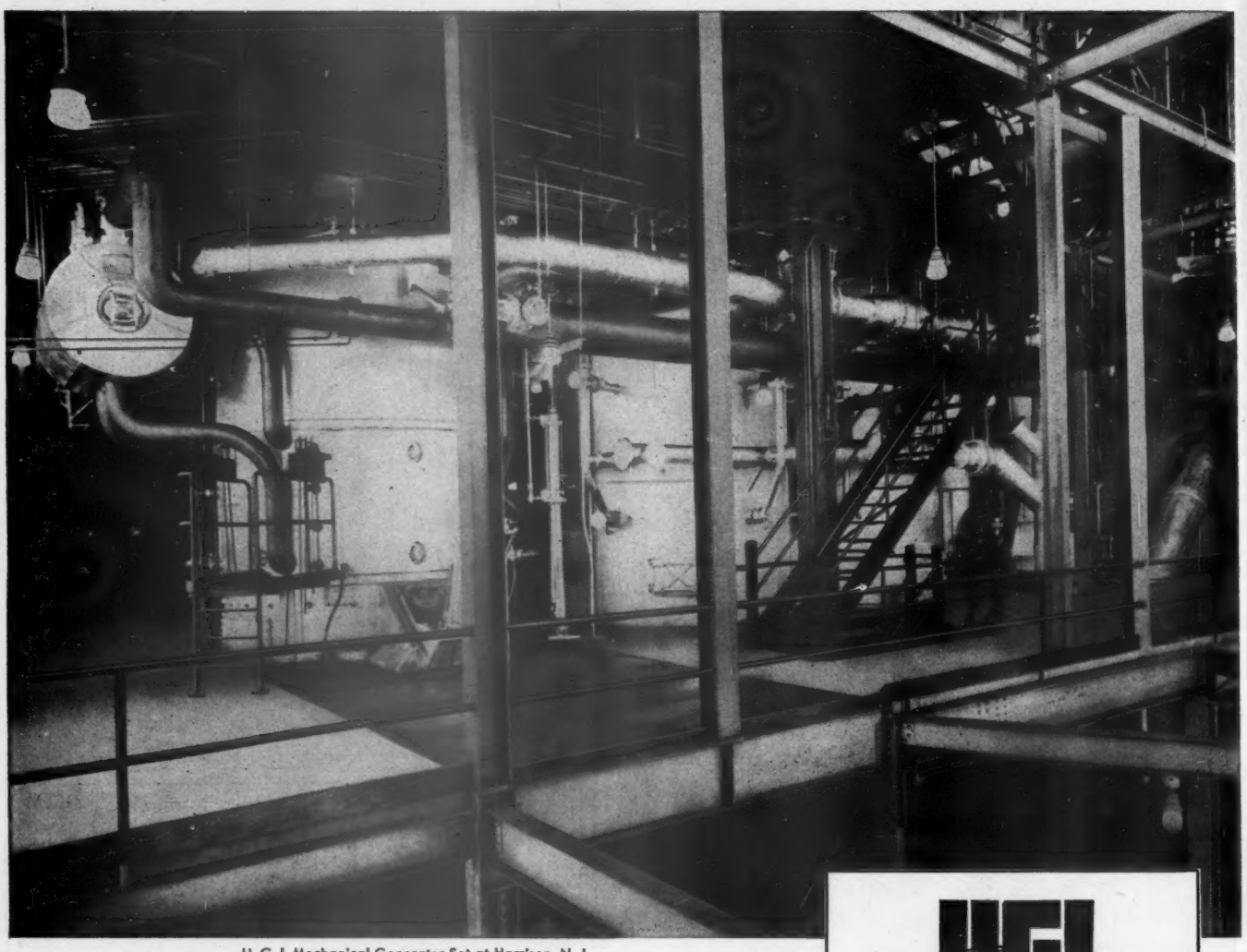

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RECENT COURT DECISIONS
Affecting Gas Utilities

Employer vs Employee

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

DURING the past few months the higher courts have laid down important law relating to employers and employes. In many instances without dependable legal information on this subject gas company officials are likely to make contracts which, although believed to be valid and enforceable, are void in every respect.

First, we shall consider the subject of company's pensions for employes who have attained a predetermined age, or who have faithfully served for a certain number of years.

Modern higher courts hold that an employer who promises to pay old age pensions to employes who, in opinion of the employer have been faithful and loyal, may be compelled to pay the promised pensions although, under certain circumstances, the employe does not remain in the employment the required number of years.

For illustration, in Wilson v. Rudolph, 194 N. E. 441, the testimony showed that many years ago a corporation issued booklets to all employes. These booklets, among other things, contained clauses explaining that employes of good standing, who *in the opinion* of the officers of the company, were loyal and faithful over a period of ten years or more, and "who have grown old in our service" will be paid pensions "probably" averaging $20 per month.

An employe was discharged after faithfully serving the corporation for more than twenty-four years. The officials of the corporation refused to pay the pension, and the employe filed suit.

During the trial testimony was introduced which proved that shortly before being discharged the employe was requested to stay at night and work overtime. At this time he explained that he had important work at home at night time and although the corporation officials insisted, the employe refused to stay at night. For this refusal he was discharged.

Notwithstanding these facts the higher court held the corporation bound to pay the promised pension. This court said:

"It is plain that the pension plan was an integral part of the program for his (employe's) employment. . . ."

Obviously, therefore, in view of this higher court decision an employer who promises to pay pensions to faithful employes cannot later avoid the responsibility by discharging an employe on a mere excuse which in the opinion of the court was for the purpose of avoiding paying the pension.

Bonus Agreement

A common source of controversy between employers and employes relates to bonus agreements. Very frequently gas companies make agreements to pay certain employes a bonus at the end of each year. It is important to know that a higher court recently rendered a decision to the effect that an employe is *not* entitled to the promised bonus if he is discharged, although without cause, before the bonus payment is due.

For example, in Leonard v. Muir, 257 N. W. 723, it was shown that a company in an employment contract agreed to pay a stipulated bonus to a certain employe at the end of the year. This contract contained a clause which, also, specified that should the employment be terminated by either the company or the employe the payment of the bonus "is entirely at the discretion of this company."

The company refused to pay the agreed bonus to an employe who had been discharged without any cause before the end of the year. The employe filed suit and asked the court to compel the company to pay the bonus. However, the court refused to hold the company liable on the bonus contract, and said:

"Courts will construe a written contract according ot the intention therein expressed, when that intention is clear on its face. . . . Where a contract is not ambiguous, it must be construed according to the ordinary meaning of the words used."

This decision is especially important because until recently the courts held that an employe who was discharged without cause is entitled to a bonus promised by his employer. Of course, in this case the original contract between the employer and employe clearly stated that if the employe was discharged the company officials could refuse to pay the bonus.

Restrictive Employment Contracts

Generally speaking, a contract is valid by which a gas company requires that employes refrain from accepting employment with a competitor or conducting a competitive business for himself. Usually contracts of this nature are desirable where employes, as salesmen, are given special instructions or training. But it is certain that although reasonable restrictive contracts are valid in a great majority of states, yet in no state is such a contract valid where the restricted period is over five years and the restricted territory is greater than ordinarily served by the employe.

For instance, in a leading case (278 S. W. 470) the higher court in commenting upon whether employment restrictive contracts are valid said:

"We agree with the proposition that one seeking to enforce the terms of a written contract between an employer and an employe, and providing that the employe shall not work for a competing company or operate a competing business, or sell goods in a designated territory, is one that the law looks upon with the greatest scrutiny. . . . The test generally applied to determine the validity of such a contract is whether or not the restraint placed upon the employe, after the employment has ceased, is

necessary for the protection of the business or good will of the employer, and whether it imposes upon the employe any greater restraint than is reasonably necessary to procure protection to the business of the employer or the good will thereof. If the contract goes no farther than to accomplish this purpose, it is generally held to be valid."

As above indicated the unreasonable provisions, likely to result in a contract of this nature being held invalid, may relate to the size of the territory in which the employe agrees to not take employment, or to the period of time over which he is bound by the agreement.

In Smith, 6 Atl. 251, it was shown that an employe agreed to not enter into competing business "in the county of Lehigh, or elsewhere" for a period of two years. The court held that the contract was valid with respect to the county, but that the employe was *not* bound by the "elsewhere" provision.

In Diamond v. Roeber, 13 N. E. 419, a restrictive contract was held void which specified that the employe would not "at any time within 99 years enter into a competing business. . . ."

In Whitmore v. King, 119 L. T. N. S. (e) a contract providing that an employe agreed to never engage in a business similar to his employer's was held invalid and unenforceable.

However, in Carlichs v. Anderson, 226 S. W. 978, a contract outlining a reasonable territory in which the employe agreed to not engage in a competing business or employment for a period of five years was held valid.

In McAnally v. Person, 57 S. W. (2d) 945, the higher court held a restrictive contract valid, and said:

"We think the facts proven clearly established the necessity for and reasonableness of the restraint granted as a protection of appellee's (ice company's) business."

And in Metropolitan Ice Company v. Ducas, 196 N. E. 856, the higher court issued an injunction restraining a salesman from continuing in employment with the competitor. In granting the injunction the court said:

"Similar agreements made by employes with their employers to become binding upon the termination of the employment are likewise valid provided they are reasonable as to time and territory. . . ."

In Stobledge Company v. Crane, 12 N. Y. S. 898, it was disclosed that a common employe, who possessed no unusual ability or talent, signed a contract not to accept employment with competitors of his employer. However, he violated the contract and obtained similar employment with a competing firm. His former employer filed suit to restrain him from continuing the employment in violation of the contract.

The court held this contract void, saying:

"It may sometimes be difficult to say just what is a special unique and extraordinary service, or whether the employe possesses special, unique or extraordinary qualifications. The solution may generally be reached by an inquiry as to whether a substitute for the employe can readily be obtained and whether a substitute will substantially answer the purpose of the contract."

In the case of Davis Company v. Miller, 177 P. 323, it was disclosed that a manager of a department of the business resigned his position and established a competing business. During the 16 years of his position as manager he had been in a confidential relation. His relations with the business were of a high order of importance and confidence. All of the trade secrets, and plans of conducting the business were confided to him. When he resigned he induced two other employes to become associated with him. After establishing the new business he became active in systematic solicitation of the old customers of his employer, endeavoring to induce them to transfer their business.

The former employer instituted legal proceedings against the ex-manager for damages and asked the court to prevent further continuation of his business. The court held the employer entitled to relief and granted an injunction against further conduction of the business.

Also, in French v. Townsend, 152 N. E. 675, a manager resigned his position and established a competing business of selling electrical and other appliances. He utilized a list of customers obtained from his former employer. The court granted an injunction restraining the former manager from these unfair tactics.

In both of these last mentioned litigations, executives had resigned positions for the avowed purpose of organizing and conducting a competing business, relying largely upon information and confidences that had been obtained by them while acting in the managerial capacity. Their former employers had no difficulty in restraining them.

On the other hand, see Spokane v. Davis, 243 P. 842, where the court refused to grant relief to an employer. In this case it was shown that a former employe had not contracted to not accept competitive employment and he solicited business generally from all persons, including the customers he had served while working for the complaining employer.

In holding that the employe was not infringing upon his former employer's legal rights, the court said:

"In the present case, there was no scheme, plan, fraud, or oppression on the part of the respondent (employe). For him to be compelled to give up all the friends and business acquaintances made during his previous employment would tend to destroy the freedom of employes and reduce them to a condition of industrial servitude."

GPM
IRON HYDROXIDE
The mark of
unerring dependability
in purification
GAS PURIFYING MATERIALS CO., INC.
3-15 26th Ave.
Long Island City 2, New York

• BARBER
Gas Pressure
REGULATORS
for Reliability!
Certified by A. G. A. Testing Laboratory. Write for Catalog and prices on Barber Conversion Burners, Appliance Burners, and Regulators.

THE BARBER GAS BURNER CO.
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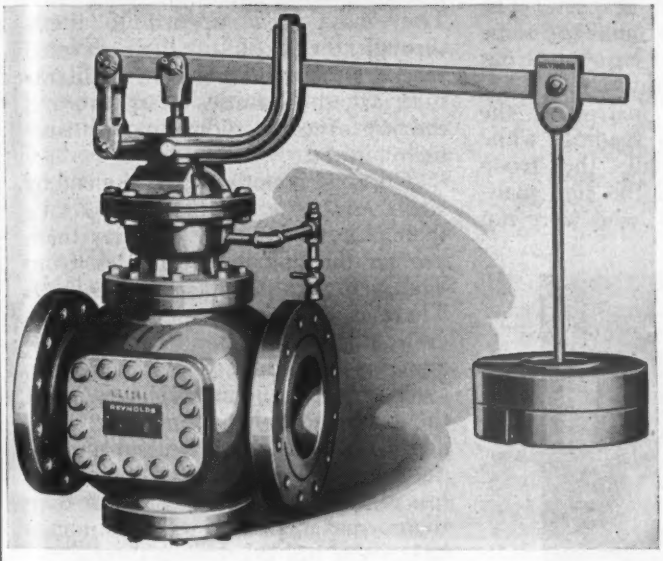
CLEVELAND OHIO
Sizes ¼ up

REYNOLDS

HIGH PRESSURE REGULATOR

Gives Wide Delivery Range



● REYNOLDS New High Pressure Line Regulators, (known as K. Series), without auxiliary bowl, feature a wider range of delivery pressure control (2 lbs. to 100 lbs.), by use of four interchangeable diaphragm cases. It is manufactured in 2″ to 16″ sizes with cast iron, cast steel or bronze body, and a swivel head that simplifies installation in different shaped spaces. The valves in this unit can be replaced while the regulator is in the pipe line. Also, this regulator is available in pilot operated or pilot loaded construction with a choice of composition or metal seats. The K. T. Series with internal toggle levers can also be furnished. In addition, Reynolds builds High Pressure Line Regulators with auxiliary bowl, when complete lock-up is required.

REPRESENTATIVES:
Eastern Appliance Company
Boston, Massachusetts
Wm. A. Ehlers, No. 268 Park St.,
Upper Montclair, New Jersey

BRANCH OFFICES:
423 Dwight Bldg.,
Kansas City, Mo.
2nd Unit, Sante Fe Bldg.,
Dallas, Texas

• GAS CONTROL SINCE 1892 •

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.

Purification

LAVINO "ACTIVATED" OXIDES

the LAVINO way

gives you MAXIMUM Removal of H_2S per pound of Oxide

BECAUSE Lavino Activated Oxide is made *especially* for maximum activity and capacity. Composed of 70% to 78% Ferric Oxide, it has —by its performance—convinced hundreds of gas plant engineers that, pound for pound, it *absorbs more hydrogen sulphide* than any other purifying material they have ever tried. You save—by using this thorough, uniformly efficient medium for gas purification.

E. J. LAVINO AND COMPANY
1528 WALNUT STREET, PHILADELPHIA 2, PA.

Graduating Exercises of The Omaha Metropolitan Utilities District Girl Scouts Cooking School

OMAHA Metropolitan Utilities has been conducting a five weeks course in cooking for Girl Scouts for 14 years under the direction of Mrs. Alta Weymuller Supervisor of The Home Service Department. The girl scouts at the end of the course receive a diploma, which entitles them to a Girl Scout Cook Badge.

The scouts are permitted to invite their mothers to a graduating breakfast, which the graduating class prepare and serve. The course is given by the Utilities to all girl scout troops sent to the Home Service Department by the Girl Scout Field Secretary. The lessons are free of charge and all the material is furnished by the Utilities.

Troop 53, the girls wearing uniforms, is of exceptional interest. The girls come from the following Nebraska Towns. Omaha, Osmond, Oconto, Concord, Allen, Hebron, Chappel Winnetoon, Chapman, Crawford and Gillette, Wyoming. The girls are all students of The Nebraska School for the Deaf, a State institution. Every one of the girls in troop 53 have partially overcome the handicap of loss of speech and hearing. Omaha Troop 60 are normal girls in every respect. The troops both worked around the same tables and got a lot of enjoyment out of each others company.

Mrs. Weymuller instructed the group entirely by lip reading, while Miss Emma Marshall, the troop leader, interpreted by the sign manual for the few girls, who were not sufficiently advanced in lip reading. The sign manual incidentally is over 200 years old and is the same all over the world, it is in fact an international language.

The diplomas were presented by Mrs. J. V. Dunbar of St. Louis, Vice President of The National Girl Scout Inc.

The children often enter the Nebraska School for the Deaf at the age of five. The complete course takes fourteen years. They are first instructed in lip reading, then follows the sign manual, picked up quickly through constant practice with their fellow students, speech is taught those who have not entirely lost that function. The girls in troop 53 have climbed a long way. They have now opened to them, through the work of their devoted teachers, a broad horizon, in literature, art, the beauties of nature and the joy of companionship with normal children.

The road is not easy. At the end of the course the graduates can take their place in industry. Today there are no unemployed graduates from The Nebraska School for The Deaf. There is even in normal times generally a greater demand for graduate students than the school can supply, since our local industry have found the graduates quick about their work, adaptable, intelligent, skillful and industrious. The accident record is less among the deaf students than the normal worker, since the students have been trained during their fourteen years of study to use their eyes.

There is a lesson we can all learn from Girl Scout Troop 53. They suffered under great handicaps. Loss of hearing and with the majority, was the added loss of speech. Did they feel sorry for themselves? Not a bit! They had no time for self pity. These girls got a toe hold and started climbing. They found, as do we all that the toe holds are a lot easier towards the top.

The picture from left to right shows Ethel Holub, Omaha, and Elsie Diehl Crawford, Neb., from troop 53, and Ruth Curtis, troop 60, Omaha, working from an Electrolux Refrigerator, while Doris Nygaard and Leonara Marx standing and Louise Price kneeling from troop 60 are looking after a cake in the Magic Chef oven. The picture was taken in the recently completed bungalow of the Metropolitan Utilities, which is capable of seating 150 people.

CLEVELAND

"A" TYPE METERS
"B" TYPE METERS
DIAPHRAGMS

Cleveland Gas Meter Co.
ESTABLISHED 1875
2009 Rockwell Ave., Cleveland 14, O. Phone CHerry 2351

COLUMBIA CONVERSION GAS BURNERS

FOR WARM AIR FURNACES AND HOT WATER, STEAM AND VAPOR BOILERS

NU-TYPE ductless burner that performs perfectly with natural, manufactured or mixed gas.

Popular with scores of utilities and thousands of home owners. Simplifies problem of converting to gas. Tamperproof controls, quiet operation, high efficiency, positive performance. Easily installed. Negligible service requirements. Each installation in a neighborhood sells many more because of its simplicity, economy and ease of control.

COLUMBIA BURNER CO.
729 Ewing St., Toledo 7, Ohio

MODEL P-ZE

Research and Promotional Program of American Gas Association

PLANS for the prompt initiation of the gas industry's new research and promotional program were made at a meeting March 8 of the special committee which will administer the funds raised by subscription of gas companies throughout the United States and Canada. At this first meeting since the fund was raised, it was reported that the financial goal of $1,400,000 had been passed and that additional funds were forthcoming.

Following a discussion of the ownership and use of any patents that might result from the research projects undertaken, particularly in the field of gas production, recommendations of various committees as to initial expenditures were reviewed and certain allocations of funds were made. Ernest R. Acker, chairman of the Special Committee on Gas Industry Research and Promotion plan presided at the meeting which was held at A.G.A. Headquarters in New York City.

Special attention was paid to gasification research projects now under way or contemplated at the Institute of Gas Technology at Chicago. The projects authorized upon recommendations of the Manufactured Gas Department's Gas Production Research Committee, P. T. Dashiell, chairman, include: Gasification of Light Hydrocarbons and of Higher Hydrocarbons; Analysis of Present Equipment and Processes; Reactions between Oxygen Steam and Carbon and Sulfur Removal. The project on oxygen reactions was tentatively approved subject to final disposition.

Recommendations of the Coordinating Committee on Research, E. P. Noppel, Chairman, covering Domestic Gas, Industrial and Commercial Gas, and General Technical Research Projects to be completed or undertaken during the Association year ending Sept. 30, 1945 were approved as submitted by Mr. Noppel's committee. Among the projects reported were:

Domestic Gas Utilization

Basic domestic gas research projects on cooking, water heating, gas burners and central gas space heating, which have been set up on a continuing basis from year to year and assigned to the A.G.A. Testing Laboratories, will be continued on an accelerated basis. In addition, the Committee on Domestic Gas Research proposes to conduct additional research projects on pilot design, construction and performance; gas-operated summer-winter hook-ups; home humidity control and possibilities of developing an all-purpose gas cooking machine. The latter projects are being investigated but have not been included in the recommended program at the present time.

Industrial and Commercial Gas Utilization

Active projects in this category which will be continued include:

- Research in Controlled Vacuum Heat Treating
- The Application of Forced Combustion to Commercial Cooking and Baking
- Investigation of Plug-in Flexible Connections for Gas Appliances
- Improvement in Non-ferrous Metal Melting Through the Application of Direct Radiant Heat

Subject to further investigation of facilities and development of detailed working outlines, the Research Coordinating Committee has approved projects in (1) Advanced studies in high speed direct heat-treating, and (2) Studies of various heat rays for transmitting heat and penetrating materials, both high and low temperatures. Funds will be requested for these projects later.

Gas Summer Air Conditioning

Funds for air conditioning research were allocated to complete a survey of water problems encountered with gas equipment and to participate in cooperative research in pressure losses in air ducts. The latter project is expected to establish reliable data on friction losses through air distribution ducts and fittings commonly used in domestic and small commercial air conditioning systems. It will be conducted by the American Society of Heating and Ventilating Engineers.

General Technical Research

Included among the approved projects in this field are:

- Investigation of Controlling and Gauging Combination Wells
- Investigation of Natural Gas Hydrates
- Completion of Mixed Gas Research and Development of Standard Test Burners
- Organic Sulfur Research
- Iron Corrosion Fellowship

Some of this work is being conducted by the U. S. Bureau of Mines, part at the A.G.A. Laboratories and the Institute of Gas Technology, while the corrosion fellowship covers work under way at Rutgers University.

National Advertising

Expanded national advertising plans, covering both the domestic and

PIONEERS in the design, fabrication and erection of gas plant equipment we originated the High Pressure Gas Holders.
Our designs of today, either vertical or horizontal type, welded or riveted are outstanding in engineering detail and fabrication. They provide an economic means of storage for service in outlying districts, for off-peak storage or to meet emergency demands.
The products and services we offer include much of the heavy equipment entering into gas making, storage, transmission and distribution.
Ask us about our Gas Holder Inspection Service.

The Stacey Manufacturing Company
CINCINNATI, OHIO
ENGINEERS • FABRICATORS • CONSTRUCTORS
Gas Holders—Gas Plant Equipment—Steel Plate Construction—Gas Holder Inspection Service

industrial and commercial campaigns, were approved as submitted by H. Carl Wolf, chairman of the National Advertising Committee.

Quarterly Progress Reports

It was decided that the Committees conducting research and promotional work underwritten from the new Research and Promotional Fund should provide the Special Committee with quarterly reports on progress made in their activities and expenditures as an aid to the Special Committee in meeting its responsibilities to companies contributing to the Plan.

Promotion

Chairman Acker announced that membership of the New Promotional Committee had been selected and that D. A. Hulcy, president, Lone Star Gas Co., Dallas, Texas, had accepted the chairmanship. This committee will meet shortly to lay out a program and to facilitate the employment of a promotional director at A.G.A. Headquarters.

Funds to be Audited

The Committee unanimously decided to make arrangements for the Association's auditors to make an annual audit of the receipts and disbursements made during the operation of the plan.

It is now planned that the Special Committee will hold regular quarterly meetings for the purpose of considering progress to date in the activities which it has authorized and for the further purpose of considering any recommendations that may be submitted for additional activities to be financed from the new Fund.

CLEVELANDS'...

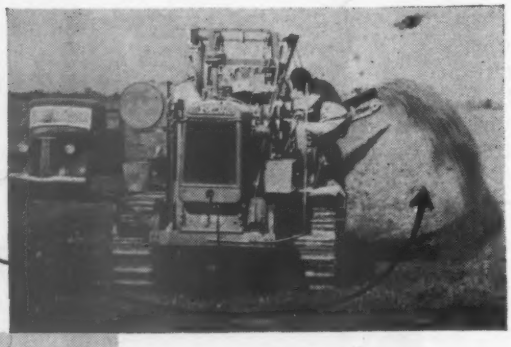
SPEED — MOBILITY — MANEUVERABILITY

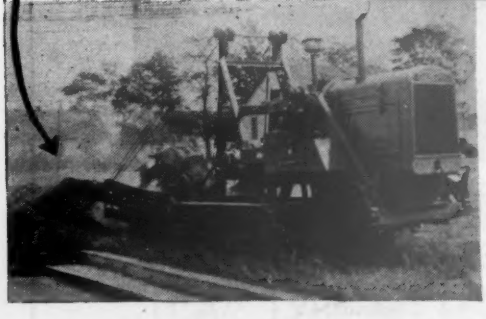
Get Them to the Job and Get the Job Done FASTER

←CLEVELANDS' Compactness and eliminated Dead Weight afford full truck or trailer Mobility.

CLEVELANDS' Speed results from its numerous Graduated Crawler and Wheel Speed combinations, plus its High Capacity Digging Wheel...

[More Dirt Off the Conveyor is Proof]





←CLEVELANDS' Maneuverability is due to its simplified Brake Controlled Differential Steering. Full speed range in either direction and balanced weight distribution.

You'll find that in CLEVELANDS every operation incidental to mechanical Trenching has been speeded up, assuring you most trench, in most places at least cost. That's why you'll want CLEVELANDS on your Postwar Jobs...

"CLEVELANDS" MAKE THE EARTH FLY

THE CLEVELAND TRENCHER CO.

20100 St. Clair Ave., Cleveland 17, Ohio

Award Program for Textbooks in Modern Design

A project in the form of an Award Program to encourage the preparation and publication of textbooks, one on machine design and another on structural design for fabrication by all processes, including welding, is announced by The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio.

Said to be an important contribution towards stimulating instruction and study for engineering undergraduates in these important fields, the program will substantially reduce the usual delay between process developments in industry and the treatment of these new developments in textbook form. This is particularly significant in view of the many new applications and improvements in welding design techniques that have resulted from the intensified activity and advancements in arc welding during the past three wartime years. Thus, the prime effect of the plan will be to render a service to engineering colleges and to the industries which employ their graduates by making this pertinent and timely information more conveniently available and comprehensible.

The Foundation's new project, known as "The $20,000 Award Program for Textbooks Covering Machine and Structural Design for Modern Processes" is made eligible to any person in the teaching profession, in industry, or engaged in private consultation. A manuscript may be submitted jointly by two or more persons. No one person can participate in the writing of more than one manuscript in each class —machine design and structural design.

The awards in the program are divided into two classes: Class A, Machine Design; and Class B, Structural Design. There are three awards in each class as follows:

Class A—Machine Design

First Award	$5,000
Second Award	$3,000
Third Award	$2,000

Class B—Structural Design

First Award	$5,000
Second Award	$3,000
Third Award	$2,000

News of the Gas Industry

N. Y. Gas Plant in Manhattan Passes After 96 Years' Service

After manufacturing gas on Manhattan Island for 120 years, Consolidated Edison Company of New York on March 1 shut down the last remaining facilities for making gas in the borough—the O'Connell Plant between 20th and 22nd Streets on the East River.

Manhattan consumers will continue to be served by the Astoria and Hunts Point plants, two of the world's largest and most modern works, which now carry the major part of the System's load, and the Ravenswood and Pelham works which, like the O'Connell plant, serve as standby facilities.

With the passing of the O'Connell Plant, which went into operation early in 1849, will go one of New York's unique institutions, the gas house district, famous in Manhattan song and story for more than a century. Reminders of the familiar scene will remain for some time after the Edison Company has vacated the manufacturing works because the two gas holders and pumping equipment will be in use until late in the year.

Much of the history of gas manufacture in this country was written in the developments at the O'Connell plant, oldest remaining plant in the New York area and the last of the gas works which were taken over by Consolidated Gas Company in the 1884 merger. O'Connell was the New York Gas Light Company's second plant, the first works having been at Hester and Centre Streets, and at its inception the custom of carrying live coals from an older plant to light the fires of a new one was established. Each plant since that time has been put into operation by coals from another plant to carry on the tradition of the "fires that never go out."

Whale and other fish oils, as well as rosin, had been the fuel used by the New York Gas Light Company until the building of the O'Connell Plant. Then, for the new works, the directors turned to imported coals from Liverpool and Newcastle, which produced gas at less cost and therefore enabled the Company to reduce its rates. New and more efficient firing methods and better equipment produced a constantly decreasing rate. The introduction of water gas was a long step in the efficient production of the fuel. The earliest rates charged by New York Gas Light were $10 a thousand cubic feet. At the new plant they were immediately dropped from $7 to $6, sliding to $3.50 by 1850. Consolidated Edison's base rate today is $1.15 a thousand cubic feet.

At the time of retiring its gas-making equipment, O'Connell Plant had a capacity of 38,000,000 cubic feet of gas a day, with storage capacity of approximately 9,000,000 cubic feet.

Pacific Gas & Electric Co. Changes in Personnel

On April 1 there were several changes among P. G. and E. key men who look after the needs and interests of large groups of customers.

Henry Bostwick, Manager of the San Francisco Division, will retire after 41 years of efficient and conscientious service.

The new Division Manager in San Francisco will be N. R. Sutherland, who has been in the company since 1913 and Manager of the Commercial Department since 1923.

James F. Pollard, formerly in the office of Vice President and Executive Engineer, will succeed Sutherland as head of the Commercial Department. He had spent several years at Salinas as General Manager of the Coast Valleys Gas and Electric Company and three more years as Division Manager after the P. G. and E. took over that company in 1927.

He was President of the Seattle Gas Company from 1930 to the end of 1943 and then returned to the P. G. and E.

The cooperative advertising campaign as now conducted by American Gas Association was first proposed by Mr. Pollard in his stirring address before the General Sessions of the A.G.A. during the 1935 convention at Chicago in October. He was then Vice Pres. and General Manager of Seattle Gas Company.

St. Petersburg to Build New Gas Holder

The City Gas Plant, St. Petersburg, Fla., will ask for bids for the construction of a new 2,000,000 cu. ft. gas holder. Priorities have been granted the city for materials needed. The new holder will be used to carry a reserve of gas to care for the increased demand during the busy season, and cold days.

TO OUR SUBSCRIBERS

The 1945 Edition of the American Gas Handbook, which we announced in November would be issued in April, will be delayed a few weeks, partly due to releases of data material to be included in it, and partly to man power shortage at our printing plant and bindery. We feel reasonably sure at this time that your copy will be in the mail on or near June 1st.

Proration for Gas?

The newly formed Louisiana natural gas conservation committee appears to be moving toward sound practice when it urges the conservation commissioner to consider a program of gas field proration and ratable withdrawals. Despite the complicated nature of such an undertaking, the interest of the state and of the independent well owners calls for prompt hearings and action by the commissioner.

Adoption of such a program would envisage proration of production by fields and the allocation of the existing demand among the wells of a field. With the rapidly growing preference for natural gas over other fuels, comprehensive conservation almost certainly will require that the commissioner authorize withdrawals on a field basis, much as the allowables for oil are now fixed. As to the ratable taking among the wells of a field, there can hardly be disagreement on the principle that the market should be kept open to independent producers on the same basis that it is to the larger producers. Equity also demands that an owner be not required to sit by with no market while his gas is drained off by a neighboring development.

The problem of ratable taking for gas admittedly is much more complex than for oil, but it is noteworthy that one of the journals of the oil and gas industry recently recognized that such regulation had become advisable.

In Louisiana much of the people's wealth and income, present and future, is bound up in these underground fuel resources. Their protection by the most progressive conservation policies is imperative. We can afford to be hopeful over the leadership the natural gas committee has taken in dealing with some aspects of protection for these resources.

Savannah Power Co. Sale Is Approved

Steps toward purchase of a controlling interest in the Savannah Electric and Power Company by Donner Estates, Inc., of Philadelphia, Pa., have been taken when a plan for refinancing outstanding bonds and debentures of the utility were approved by the Georgia Public Service Commission.

Donner Estates, a philanthropic foundation, plans to buy $2,700,000 worth of common stock in the company from Engineers Public Service Company of New York, provided approval is given by the Federal Securities and Exchange Commission.

The foundation's agreement to buy was conditioned on approval by the Georgia commission of the application of Engineers Public Service Company to retire over $9,000,000 worth of bonds and debentures stocks and to issue other bonds and notes paying lower interest rates.

Illinois Electric & Gas Co. Acquires Western United Properties

The Illinois Commerce Commission has authorized the Illinois Electric and Gas Co. to purchase from the Western United Gas and Electric Co. for $825,000 certain gas and electric properties in Jackson, Williamson, Franklin and Perry counties.

The properties involved are electric properties in Murphysboro and gas properties in Benton, Buckner, Carbondale, Carterville, Christopher, Crainville, Duquoin, Energy, Herrin, Johnston City, Marion, Murphysboro, West City and West Frankfort.

Estate Stove Company Resumes Magazine Advertising

The Estate Stove Company, Hamilton, Ohio, resumed advertising with a series of advertisements starting in the March issues of a number of leading publications.

Products featured in the advertisement are Estate Heatrola Ranges—for city gas, for L.P. gas, for electricity. Although the company has made no ranges since 1942, and the date for resumption of range manufacture is still indefinite, the company feels that resumption of advertising at this time is not only well justified but definitely in line with the public interest.

"Why advertise when we are making no ranges? I know this question will be asked," said Walter S. Rowe, merchandising and advertising manager of Estate, "but the answer is simple.

"We realize that postwar competition between manufacturers will be terrific, particularly in our line, where so many new concerns have announced that they will enter the field.

"And so if we are to realize the production goal that has been set for our peacetime operations, if we are to assure high levels of employment, we must make sure that our products will be in high demand. That's where national advertising comes in."

These magazines will carry the advertising: Woman's Home Companion, American Weekly, House Beautiful, House and Garden, Better Homes & Gardens, Household, Farm Journal, and Successful Farming.

Since the total circulation of these magazines is over 20 million copies, Estate figures that its message will reach nearly two out of every three families in every community this year.

The General Appliance Company, Omaha, Nebraska, a new concern in the appliance field, has just been appointed Estate Heatrola distributor for the Eastern section of Nebraska and Southwestern Iowa. S. C. Bernhardt, Vice-President in Charge of Sales of The Estate Stove Company, in making the announcement, stated that the distribution pattern for Estate Heatrola ranges and heaters is now practically complete.

These heroic Fond du Lac boys
have given their lives to defend
OUR BEAUTIFUL AMERICA
IS IT WORTH A LOAN OF YOUR
MONEY AT GOOD INTEREST?

WINDOW DISPLAY OF WISCONSIN POWER & LIGHT CO.

This 6th War Loan window display won 2nd prize in Division C of the A.G.A. window display contest. The central motif of action pictures of the war is flanked by photos of Fond du Lac heroes who have made the supreme sacrifice. The display was arranged by M. R. Norton, District Sales Supervisor.

Florida Utilities Corp. Takes Over Gas Properties

A hearing on the Florida Power Corp.'s plan to sell its gas utilities serving Orlando, Winter Park, Sanford, Orange City, Maitland and DeLand to Florida Utilities Corp., has been set by the Securities and Exchange Commission.

F. Burton Smith, officer of the Florida Utilities Corp., announced the hearing was only routine as the purchase price and other details of the transaction had been approved by the Florida Power Corp., and the hearing was for the purpose of gaining the approval of the SEC. Smith stated he believed the approval would be granted immediately after the hearing.

Radiant Heating with Concealed Floor Coils

That gas-fired boilers have been the predominant choice to date for radiant heating systems in the residence field is revealed in the new handbook, "Byers Wrought Iron for Radiant Heating," just issued by A. M. Byers Company, Pittsburgh.

Chief purpose of the 52-page book is to serve architects, engineers, heating contractors and plumbers as a working manual. Detailed procedure is listed for figuring heat losses and piping requirements, designing the coils, supply and return mains. Factual data is presented on the relative merits of locating the coils in floor and ceiling. Included is a full page drawing of a floor-type radiant heating system for a representative industrial building in which both sinuous coils and grids are used to advantage.

The book records in pictures and text 23 typical installations covering a wide range of structures, including churches, medical buildings, libraries, taverns, factory buildings, office buildings, and residences.

In addition to chapters on the theory, history, and achievements of radiant heating in more than a thousand installations functioning in the United States, the handbook devotes 12 pages to answering the 34 questions that technical men most frequently ask.

E. D. Kenna Accepts Mid-Continent Oil and Gas Assn. Post

E. D. Kenna, Jackson, Miss., director of the State Highway Department since 1932, has resigned to accept the post of executive vice-president of the Mississippi-Alabama division of the Mid-Continent Oil and Gas Association.

The Mississippi-Alabama branch of the Mid-Continent Association was formed last fall by operators, lease brokers, royalty owners, lawyers, bankers, refiners and others interested in the rapidly expanding oil play in Mississippi, which experts now predict will soon become one of the nation's leading oil producing states.

C. L. Morgan is president of the Association, Buford Yerger has been acting secretary of the new group, under an agreement that a permanent officer to take over all secretarial work would be named as soon as possible.

Tayman with Federal Power Commission

George S. Tayman has recently accepted a position with the Federal Power Commission as Natural Gas Engineer in the Division of Rates and Research, Bureau of Accounts and Finance. For the past two years he has been employed as Natural Gas Engineer in the Office of War Utilities, War Production Board. Previous to his coming to Washington in 1943, Tayman was associated with the Union Gas System, Inc., of Independence, Kansas, and one of its predecessor companies, the Owen-Osage Oil and Gas Co., for a period of 22 years. He graduated in Mechanical Engineering at Carnegie Institute of Technology.

Consumers Gas Company Elects Schultz Asst. Treas.

The election of James A. Schultz as Assistant Treasurer of Consumers Gas Company was announced today by Allyn C. Taylor, President of the Company. The action was taken by the Board of Directors at its meeting on February 21, and will become effective March 1. Mr. Schultz is also Secretary and Treasurer of the Reading Gas Company.

He has been employed in the Accounting Department of the Gas Company since 1924, having advanced to the position of Office Manager in 1933.

For many years Mr. Schultz has taken an active part in the affairs of the American Gas Association and the Pennsylvania Gas Association, having served on many committees. Currently he is Treasurer of the Pennsylvania Gas Association.

Hulcy Appointed Chairman A.G.A. Promotional Committee

D. A. Hulcy, president of the Lone Star Gas Corporation, Dallas, Texas, has been appointed chairman of the newly-created Promotional Committee of the American Gas Association, it is announced by J. French Robinson, president of the Association.

The Promotional Committee will supervise the activities of the Promotional Bureau shortly to be organized at A.G.A. headquarters as part of the enlarged research and promotional program underwritten by the gas industry. Personnel of the committee, which will be announced shortly, will include representatives of the various sections, departments and interested committees of the Association, as well as members at large representing the best promotional talent in the industry.

The program contemplates appointment of a full-time promotional director on the A.G.A. staff and greatly enlarged gas advertising and promotional activities.

A. O. Smith Corporation Adds To Sales Force

Three new members have been added to A. O. Smith Corporation's southwest district sales force, according to an announcement by J. E. Woodall, manager of A. O. Smith's Home Appliance Division.

They are R. C. Anderson, sales manager, and Buster Welch and E. E. Edge, sales representatives of the home appliance division. All are well known in the utilities and home appliance fields, and their headquarters will be in the company's Houston, Tex., office.

Mr. Anderson has served as sales manager of the Mississippi Power and Light Co., residential and commercial sales manager of the Memphis Power and Light Co., and residential sales manager of the United Gas Corporation in Houston.

Mr. Welch attended Rice University and Carnegie Tech, then joined the Ruud Manufacturing Co., as salesman. In 1941 he resigned to enter government work and, previous to joining the A. O. Smith Corporation, was mechanical engineer for Headquarters, 8th Service Command, where he was in charge of testing gas systems in New Mexico and Texas.

Mr. Edge is a native Texan. He has been associated with the Standard Gas and Equipment Co., of New York, the Houston Natural Gas Co., operated his own home appliance firm in Pasadena, Texas, until the war, and since then returned to The Houston Natural Gas Co., as service consultant and department manager of operations for domestic accounts.

W B. Holton, Jr. Elected to Head Valve Manufacturers Group

W. B. Holton, Jr., President of the Walworth Company, manufacturers of valves and fittings, was elected President of The Valve Manufacturers Association, a national organization, at a meeting held February 9th.

W. B. Holton, Jr.

Since 1943, Mr. Holton has been Production Consultant and Head of the Valve and Fittings Industry for the War Production Board in Washington as a Dollar-A-Year man. His resignation from this position became effective February 1. In a letter accepting Mr. Holton's resignation, Mr. H. G. Batcheller, Chief of Industry Operations and Vice Chairman of the War Production Board, expressed to Mr. Holton the thanks and appreciation of the Board for his "interest, resourcefulness, helpful guidance and competent advice in the handling of the many problems that have been ever present in the Valve and Fittings industries."

In accepting the presidency of the Valve Manufacturers Association, Mr. Holton succeeds Ernest Cochran, Vice President of the Chapman Valve Manufacturing Company, Indian Orchard, Mass.

Synthetic Rubber Hose

A new aid to combatting refinery and oil well fires—a new type of fire hose employing synthetic rubber—is announced by The Goodyear Tire & Rubber Company.

W. C. Winings, manager of Goodyear's Mechanical Goods Division, and R. W. Sanborn, manager of the hose department, disclosed that the hose is especially suited also for fire protection in chemical, acid and fertilizer plants.

Designated by Goodyear as Style "M" fire hose, the use of synthetic rubber on this product provides complete resistance to oil, acid fumes, sunlight, mildew and rot, according to Winings and Sanborn.

This is important in the case of refineries and oil wells, it was said, because fire hose frequently comes in contact with oil and gasoline during use. In addition, it is subjected to fumes while not in use. Thus conventional fire hose, after being subjected to such conditions, is more apt to fail in emergencies.

The synthetic rubber interior of the hose—a different type of synthetic rubber than the exterior sheath—is likewise resistant to deteriorating action from special fire-fighting compounds.

Produced in 1½"; 2"; 2½" and 3" diameters.

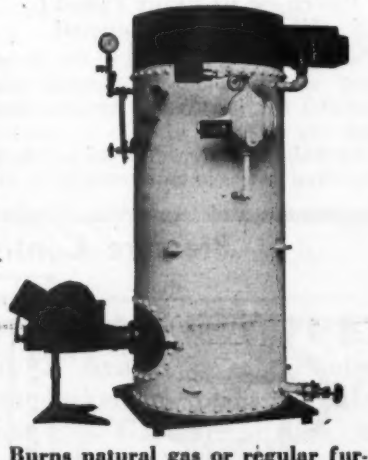
Dresser Industries, Inc. Opens Consolidated Offices

Dresser Industries, Inc., opened March 15th, consolidated domestic and export sales offices for the member companies, in the Chanin Building, New York.

The sales offices of the Dresser member companies were formerly located individually throughout the New York business district. The new offices will afford closer coordination, and be of advantage to customers and distributors interested in the related products of Dresser Industries, Inc.

Sales departments of Dresser member companies will be the Dresser Manufacturing Division, Bryant Heater Co., Clark Bros. Co., Inc., Pacific Pumps, Inc., International Derrick & Equipment Co., Roots-Connersville Blower Corp., and Stacey Bros. Gas Construction Co.

LATTNER
GAS — OIL BOILER
3 HP to 35 HP.

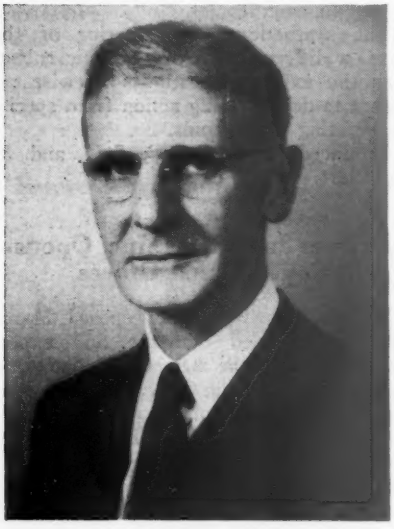


Burns natural gas or regular furnace oils with equal efficiency using same burner.

P. M. Lattner Mfg. Company
Cedar Rapids, Iowa

McDonald Appointed A.G.A. Publicity Director

George A. McDonald, for the past eight years public utility and railroad editor for the *New York Sun,* has been appointed director of publicity for the American Gas Association. He will have charge of general publicity in coordination with the expanded program of research, advertising and promotion that has been underwritten by the gas utility companies throughout the country.



George A. McDonald
© *Underwood & Underwood*

Mr. McDonald, in addition to his newspaper experience, has a background of fifteen years in promotion and publicity work in the food and home furnishings fields. He served as a member of the advisory council that initiated the first advertising and promotion campaign undertaken by the Carpet Institute of America.

He is a charter member of the New York Financial Writers' Association and served as an officer and director of that association from the time of its inception.

Purchase of Plant Voted by Miami Beach Council

Purchase of the gas plant of the Peoples Water and Gas Co. for approximately $2,500,000 has been voted by the Miami Beach city council.

The deal, however, will be subject to the approval of voters in an election to be held shortly. Residents paying real estate or personal property taxes will be eligible to vote.

Gas plant properties covered by the purchase price include the plant at North Miami and lines extending to Ojus, Hallandale, Hollywood and Dania.

General Controls Expansion

In order to keep up with steadily increasing production schedules, General Controls Co., Glendale, Calif., manufacturer of electro-magnetic control valves, announces the completion of another step in an expansion program that will soon put three acres of factory space under roof. The immediate expansion includes a processing plant, with 10,000 sq. ft. of space, in which the Heat Treating, Anodizing, Mechanical Deburring, Sand Blasting and Painting Departments are housed.

In addition, a new, modern office building will soon be ready for occupancy and will house the Executive Offices, the Administrative, Sales, Advertising and Sales Promotion Departments.

While General Controls Co., is engaged almost entirely in essential war production, and will be for the duration, it is planning and building for a permanent post-war future.

Recent appointments include that of A. E. Hess as Manager of the Houston Branch Office. Hess, who has had many years of experience in the engineering field, will devote his entire time to serving users of automatic controls in the heating, refrigeration, aircraft and industrial fields throughout Southern Texas, Louisiana and Southern Mississippi.

Gas-Fired Floor Furnaces and Space Heaters

W. B. Evans, president of the Tennessee Enamel Manufacturing Company, Nashville, announces the appointment of McCann-Erickson, Inc., of Cleveland, as advertising agency. The company manufactures gas-fired floor furnaces, space heaters and Porcelain Enamel signs and table tops.

Under direction of Frank Drake, advertising manager, work is now going forward on a complete program of advertising and sales promotion, in anticipation of intensive sales effort after the war. Now in preparation are campaigns to consumers and the trade, to be coordinated with sales promotional help for dealers and distributors. Advertising will be concentrated on floor furnaces and space heaters, for which Mr. Evans sees a post-war market of encouragingly large proportions.

Willputte Coke Ovens for Indianapolis

The board of directors of the Citizens Gas and Coke Utility, Indianapolis, Ind., announced the letting of a contract to the Willputte Coke Oven Corp. of New York, the successful bidders, for the construction of a new battery of coke ovens and a three-unit producer plant to supply oven underfiring fluel, to be built at the Prospect St. plant.

The new coke oven battery will consist of 47 combination, underjet, by-product ovens and will cost $1,641,000, to be paid for out of accumulated reserves set aside for this purpose.

The normal life expectancy of a coke oven battery is approximately 20 years. Battery "E", which the new ovens will replace, was built in 1918 and has seen more than 27 years of service.

The three-unit producer plant, to be built at a cost of $623,000, will supply low B.t.u. gas for underfiring the new battery and battery "H" built in 1941, both of these batteries being so constructed as to make the burning of low B.t.u. gas possible.

If materials, labor, circumstances and conditions permit, it is expected that the new battery of coke ovens and the new producer plant will be in operation by Jan. 1, 1946.

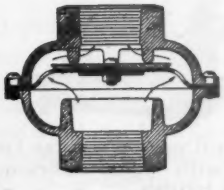
Twelve batteries of Underjet High and Low Burner By-Product Coke Ovens, totalling 682 ovens, with an annual coal capacity of 5,951,900 tons is the Wilputte Coke Oven Corporation's contribution up to date, to the war's demands on our metallurgical industry.

In the United States, Wilputte plants have been built during the war for the following firms, with the number of ovens noted for each: E. I. du Pont de Nemours & Company, Morgantown, W. Va., two batteries, 74 ovens; Semet-Solvay Company, Ironton, Ohio, one battery, 76 ovens; Tennessee Products Corporation, Chattanooga, Tenn., one battery, 20 ovens; Bethlehem Steel Company, Lackawanna, N. Y., two batteries, 152 ovens; Carnegie-Illinois Steel Corporation, Gary, Indiana, one battery, 77 ovens; Republic Steel Corporation at Warren, Ohio, one battery, 61 ovens; at Gadsden, Alabama, one battery, 65 ovens; at South Chicago, Ill., one battery, 75 ovens; Interlake Iron Corporation, Perry Works, Erie, Penna., one battery, 35 ovens.

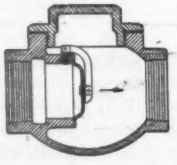
Under construction for Citizens Gas and Coke Utility, Indianapolis, Ind., one battery, 47 ovens.

In four of the above plants, Wilputte has installed the latest development in by-product equipment for the production of Ammonium Sulphate; namely, the Wilputte Crystal Sulphate Equipment, producing uniformly controlled size of ammonium sulphate crystals.

Pressure Controls for Gas and Air



HORIZONTAL
DIAPHRAGM
CHECK VALVES
DISC
VERTICAL



NORWALK VALVE COMPANY
85 Spring St. South Norwalk, Conn.

Howe Service Committee Meeting
Hotel Stevens, Chicago March 14th.

Front Row—Left to Right—Ella L. Lambert, Milwaukee, Wis.; Julia Hunter, Dallas, Texas; Margaret Andersen, Grand Rapids, Mich.; Jessie McQueen, American Gas Association; Colleen Fowler, Chairman of Committee, Kansas City, Mo.; Ruth Sheldon, Washington, D. C.; Joan Huck, Cleveland, Ohio; Ada Harbaugh, Joplin, Mo.; Mary Hall, Elizabeth, N. J.

Rear Row—Left to Right—Margaret Holloway, Baltimore, Md.; Vivian Marshall, New Orleans, La.; Mary B. Burnett, Cincinnati, Ohio; Susan Mack, Boston, Mass.; Kathryn Barnes, Pittsburgh, Pa.; Lillian Dunbar, Cambridge, Mass.; Margaret Crooks, Rock Island, Ill.; Mildred Clark, Tulsa, Okla.; Fay Rudolph, Evansville, Ind.; Irene Hickey, Detroit, Mich.; Florence Windecker, Mansfield, Ohio; Rita Abbruzzese, Poughkeepsie, N. Y.; Jeannette Campbell, Minneapolis, Minn.; Irene Muntz, Rochester, N. Y.; Ruth Soule, Brooklyn, N. Y.; Mercedes Bates, Los Angeles, Calif.; Cephalie Lewis, Atlanta, Ga.; Hulda Ungericht, Columbus, Ohio.

Home Service Holds Two-Day Meeting in Chicago

In lieu of two of the Home Service Regional Work Shops originally planned for the work of the Home Service Committee this year, Colleen Fowler, Chairman of the Committee, called a two-day Home Service Committee meeting which met in Chicago, March 14th and 15th.

The program was divided into 1) Discussion of committee projects to be prepared as printed reports; 2) Discussion of problems immediately at hand, such as sub-committee discussions on problems to be developed as future projects and the promotion in 1945 of the Victory Garden and food preservation program. Policies affecting the promotion of kitchen planning as it affects home service were reviewed in a "Questions and Answers" feature. Experts answering the questions included Mrs. Virginia Hart of Servel, Inc., and Harry Swenson of The Peoples Gas Light & Coke Company, Chicago. Creative cookery and ways of stimulating the use of rationed foods were outlined by Esther Latzke of Armour & Company in Chicago.

Committee projects and the chairmen of each are:

"A Home Service Training Course Within the Company," Chairman, Jeannette Campbell, Minneapolis Gas Light Company.

"A Handbook on Home Service for High School and College Students," Chairman, Hulda Ungericht, The Ohio Fuel Gas Company.

"Modern Kitchens for Homemaking Instruction," Chairman, Ruth Sheldon, Washington Gas Light Company.

Discussions in the sub-committees included: projects for study in work simplification, home service use of commercial materials and literature, home service publicity in house organs and magazines.

Photo taken at the meeting on the 14th shows committee members in session.

Central Electric & Gas Co. Acquires Iowa-Nebraska Co.

Central Electric and Gas Co. announced March 8 that it had completed the purchase from Continental Gas and Electric Corp., a subsidiary of United Light and Power Co., of the gas properties of Iowa-Nebraska Light and Power Co. in Lincoln, Neb., and vicinity.

Central Electric and Gas Co. now owns and operates natural gas and electric utility properties serving 76 communities in the states of Nebraska and South Dakota. The general offices of Central Electric and Gas Co. are located at Sioux Falls, S. D., where a complete supervisory staff is maintained for functions characteristic of both gas and electric, as well as telephone operations.

The Nebraska gas properties which have now been purchased by Central Electric and Gas Co. provide natural gas service in 38 communities including Lincoln and Beatrice and manufactured gas service at Norfolk. The aggregate population of the 39 communities served is 150,780 according to the 1940 U. S. Census and as of June 30, 1944, the number of customers served totaled 36,500.

Gas Industry in Australia and New Zealand

The statistical Year Book issued by The National Gas Association of Australia includes the following data for 1943. Australia:—

Gas Sales 26,300 million cu. ft.
Increase over 1939.....38.6%
Increase over 1942.....10.6%
Meters in service.....1,020,000

New Zealand:—Increase in gas
Sales over 1942.....3%
Meters in service 164,318
Gas Sales 3,600 million cu. ft.

The Reliable Shut-Off for Street Mains

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

Pittsburgh Equitable Meter Co. Adds Service Engineers

Announcement was recently made by A. J. Kerr, General Sales Manager of Pittsburgh Equitable Meter Company-Merco Nordstrom Valve Company, of the addition of two Service Engineers to the firm's New York District Office. These men, William H. Johnson and George L. Geuss, will handle the sale and service of Pemco and Merco products in sections of the territory under the jurisdiction of M. J. Harper, District Manager. The New York office territory comprises most of that state and the state of New Jersey.

W. H. Johnson

G. L. Geuss

Mr. Johnson, a native of New York City, has been connected with the manufacture of water meters and water meter parts for the past 15 years.

Mr. Geuss has been with the company for several years, covering a part of New York State. In his new assignment, he will cover the same area as before, plus some new territory in the state.

Foxboro Appointments

The Foxboro Company, Foxboro, Mass., announces that William A. Rock will be its resident engineer in the Corpus Christi area, under the direction of the Houston office.

Mr. Rock has spent most of his life in the Southwest and his business experience has been principally in the instrumentation of oil refineries and gas plants..

Mr. James M. Tuttle has joined the staff of engineers attached to the Pittsburgh office. He has a background of experience which will be particularly useful in serving the diversified industries of the Pittsburgh territory. A graduate of M. I. T., he spent several years as an engineer with an industrial construction company, and later conducted his own business as a manufacturers' representative and engineering consultant.

Gray Appointed Works Mgr. of Bryant Heater Plant

Gordon N. Gray has been appointed works manager of the St. Clair plant of the Bryant Heater Company, Cleveland, according to announcement by Lyle C. Harvey, president.

He is a graduate of Case School of Applied Science, with a degree in mechanical engineering. Previous to joining the Bryant Heater Company in 1933, he was a research and sales engineer for the U. S. Air Compressor Company.

Lincoln Electric Names W. R. Persons Assistant Sales Manager

The appointment of W. R. Persons as assistant sales manager has been announced by J. F. Lincoln, President of The Lincoln Electric Company, Cleveland, Ohio. In his promotion to this new post, Mr. Persons will act as assistant to C. M. Taylor, vice president and general sales manager.

Among his activities concerned with the advancement and supervision of the entire Lincoln sales program, Persons will assume the responsibility of developing certain specific fields for Lincoln products. In this connection he has been working on special assignments since his transfer to the Lincoln home office at Cleveland several months ago. He is also chairman of the firm's Junior Board of Directors. Mr. Persons has been with the company for the past ten years.

A. O. Smith Corp., International Division Appoints A. E. Cripps

New York offices for A. O. Smith Corporation's International Division have been opened in the Commerce Building, New York, with A. E. Cripps, newly-appointed Eastern supervisor, in charge.

In addition to handling the firm's export activities in New York, Cripps also will supervise its lend-lease and foreign government business in Washington, according to W. H. Porth, International Division manager.

Cripps was born in England, attended King's College and London University, and was a captain in the Royal Flying Corps in World War I. He came to the United States in 1919, became a citizen in 1928, and has been associated with the American Smelting & Refining Co., Black & Decker, and was foreign manager of John A. Roebling Sons & Co., for 13 years.

Robertshaw Thermostat Co. Makes Promotional Appointments

As part of its broad post-war program for expansion and product development, Mr. John A. Robertshaw, President of the Robertshaw Thermostat Company, announces the appointment of Mr. W. D. Crouch as General Manager of the Commercial and Industrial Division of that company.

In making this announcement, Mr. Robertshaw said: "Mr. Crouch will make his headquarters at the main office at Youngwood where we will have the advantages of close contact between sales, research, engineering and production. It is believed that this step will be beneficial to the handling of regular business and will advance the application of thermostats to many new products and industries.

"Mr. Crouch has been associated with the Robertshaw Thermostat Company since 1918. He is one of the pioneers in the thermostat field. The wide recognition thermostats have received in the commercial cooking field is due, in no small part, to the promotion job done under his direction while sales manager of this Division. In 1918 few, if any, commercial cooking appliances were equipped with thermostats. Today thermostats are standard equipment on ranges, ovens, urns, steam tables, dish washers and other items of commercial cooking equipment. Their importance is widely recognized in the Food Service Industry and scarcely an article on roasting, baking or kitchen management now appears in the editorial columns of the publications in this field without mention of or emphasis upon the importance of thermostatic control for modern cooking equipment.

"Mr. Crouch is a recognized authority on the subject of temperature control and has been active on many committees of the Association and of the Food Service Equipment Industry. His new assignment will include the supervision of advertising and sales promotion in the commercial field and the preparation of manuals and educational activities for utility and dealer sales and service men."

W. D. Crouch

J. L. Gabris

At the same time, it was announced that Mr. Joseph L. Gabris, formerly of the St. Louis Division of the Robertshaw Thermostat Company, has been appointed District Manager with headquarters at 30 Church Street, New York. He is a graduate of the College of Engineering, University of Missouri and has had broad experience in the thermostat field. He will be in charge of sales of domestics as well as commercial and industrial thermostats in the Eastern district.

New New York district offices are being established at 19 East 47th Street, New York, 17.

Five Million Cubic Foot Gas Holder for Long Beach, Cal.

Construction of a five million cubic foot telescopic gas storage holder for the City of Long Beach, California, has been awarded to The Stacey Bros. Gas Construction Company, one of the Dresser Industries. Steel erection will start by May 15.

The five-lift structure will be the world's largest all-welded panel type, water-seal gas holder and will provide reserve storage to meet the high peak loads which have resulted from the increased industrial activity in this area.

The Stacey Brothers vertical panel construction will be used, which permits the use of larger plates, more prefabrication and greater ease in assembly. Fabrication will be handled in the company's Cincinnati, Ohio and Torrance, California plants.

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EQUIPMENT FOR SALE

Following slightly used machines:
1—3½" x 10" Connersville Rotary Displacement Gas Meter with 3" inlet and outlet—Capacity 5000 cu. ft. per hour.

1—No. 65 Connersville Type XAS Gas Pump, capacity 5400 cu. ft. per hour at 690 R.P.M. against 6 lb. pressure with 5 H.P. electric motor.

SCRANTON-SPRING BROOK WATER SERVICE COMPANY
135 Jefferson Avenue, Scranton, Pa.

CONVENTION CALENDAR

April

17-19 *Southwestern Gas Measurement Short Course,* Norman, Okla.

May

7-11 *National Fire Protection Association,* Annual Meeting, Palmer House, Chicago, Ill.

16 *Pennsylvania Gas Association,* Philadelphia, Pa. Attendance limited to 49—invitation only.

June

19-22 *Canadian Gas Association* Victory Convention, Murray Bay, Quebec. Boat party leaves Montreal, June 18.

GEORGE TRENHOLM MACBETH
CONSULTING ENGINEER
14 BROOKSIDE CIRCLE, BRONXVILLE 8, N. Y.
FORMERLY CHIEF GAS ENGINEER
WESTCHESTER LIGHTING CO., MOUNT VERNON, NEW YORK

Harper-Wyman Co. Features Burner System in Colorful Display

A new series of full color, two-page advertisements is being launched by the Harper-Wyman Company, Chicago, makers of the Harper Burner System.

The first advertisement is appearing in the April issues of gas industry publications, and will also be reproduced in black and white in two of the trade papers on the list.

"What Woman Wills, Will Be" is the theme of the series. Each advertisement illustrates one advance toward the better way of living which came as a result of women's dissatisfaction with antiquated ideas or methods. The point is made that today women want gas ranges that are equipped with the Harper Burner System.

Artists of national repute, whose work appears in the pages of leading magazines, were selected to make the illustrations. Among them are William Cleaver, Ralph Crawley, Vincent Guise, Charles M. Hawes, Robert Patterson and Kenneth W. Thompson.

Vaporizer for L. P. Gases

Realizing the need for a positive vaporizer for gases with a tendency to vaporize slowly at low temperatures, a new design was developed by the engineering staff of the Oxford Company and has met with exceptional success wherever installed.

Its outstanding feature is the fact that it is placed outside the tank, is always accessible, and is positive in its action. This company entered the manufacture of steel cabinets for bottled L-P gas about 1943, and for ten years have been supplying these cabinets, both the hood type and for complete enclosures.

In carrying on its regular engineering and manufacturing service to the gas industry, it has done much work in devising standby or change-over systems of L-P gas for manufactured gas companies.

The Oxford Gas Company has also been active in war work, much of it being of an engineering and construction nature.

Established in 1928, the main offices of the company are at Oxford, Pa. John H. Ware 3rd is president and general manager.

Natural Gas As a Source of Gasoline

(Continued from page 18)

line because gas will be cheapest; and it will use an improved Fischer synthesis. The process, in brief, is to use steam, reacting it with the methane in natural gas to form carbon monoxide and hydrogen. At high temperature, and in the presence of a catalyst, these gases are then recombined to form CH_2, the basic building block for liquid fuels. Gasoline made by the Fischer process has a low-octane rating, but can be re-formed for a higher octane rating. The process produces excellent Diesel fuel.

In 1943, Robert P. Russell, President of Standard Oil Development Co., research and development subsidiary of Standard Oil Co. (New Jersey), said he believed gasoline made by the improved Fischer process was competitive with gasoline from crude. Mr. Russell assumed natural gas would cost 5 cents per 1,000 cubic feet; crude, $1.20 a barrel. As 10,000 cubic feet of gas in this process is about the equivalent of a barrel of crude in gasoline manufacture, this means that the raw-material cost alone would be: gas, 50 cents; crude, $1.20—the low raw-material cost must offset high plant investment. Other cost estimates are not quite so favorable to the Fischer method. Dr. Robert E. Wilson, Board Chairman of Standard Oil Co. (Indiana), believes the Fischer process is competitive with crude if gasoline prices remain at their present level. G. G. Oberfell, Vice President in charge of research for Phillips Petroleum Co., estimates that the process would be competitive with crude oil at a price approaching $2 a barrel, without giving credit to process improvements and other favorable factors that can be expected to increase the incentive in the future.

The M. W. Kellogg Co., constructor of refinery equipment, is now offering to build Fischer plants, and P. C. Keith, President of Hydrocarbon Research, Inc., has announced his company will build a commercial Fischer plant "soon." But most companies probably will not rush into the field. The transfer of the process from laboratory and pilot-plant stage is sure to be difficult, and many U.S. operators would like to wait to find out what the Germans have learned during the war. Obsolescence will be rapid, as with all new processes. The market for gasoline immediately after the war may be bad, with seven million cars worn out and off the road. Finally, the supply of natural gas is not too secure. About 75 per cent of it is already earmarked for other industrial and domestic uses ,and is being used at a rate that would exhaust present proved reserves in about thirty years. The only large supplies of unallocated gas are in the Texas Panhandle and in the Hugoton field in Kansas and Oklahoma; there the first Fischer plants probably will be built. One factor in favor of gas is that, as wells go deeper, the ratio of gas to crude is steadily rising. Someday natural gas may supply 15 per cent of U. S. gasoline requirements.

Some conservation-minded experts, like the Bureau of Mines' eminent Dr. Arno C. Fieldner, think most natural gas should be used as gas, as it loses about half its heat content in being turned into gasoline. The Bureau of Mines, with a $30 million authorization, is beginning a five-year study of the production of liquid fuels from oil shale and, by both the Fischer and Bergius processes, from the abundant reserves of coal. The bureau's research men will pass up natural gas, because they feel it has already been established as a gasoline raw material, and because coal offers a better long-term supply.

Omaha Utility Announces Board Changes

Frank L. Frost, attorney and member of the board of directors of Metropolitan Utilities District, Omaha, Neb., municipal gas and water system, the past four years, has been elected chairman, succeeding Allan A. Tukey, who served as chairman three years.

Dr. Willard H. Quigley, a past chairman of the board, was renamed vice president. Both men were elected unanimously by the directors.

General Manager Walter S. Byrne reported that 1944's gas output set a new record, 3,811,001,400 cu. ft., up 2.7 per cent over 1943 and 19.7 per cent greater than 1940.

Extension of facilities for house heating with gas, Mr. Byrne told the board, will be one of M.U.D.'s greatest future problems. He estimated gas department construction costs for the next five to 10 years from $2,500,000 to $5,000,000.

Metropolitan Eastern Corp. Plans Texas-Ohio Line

The FPC recently revealed that the Metropolitan Eastern Corp. has applied for permission to construct and operate 825 miles of 18-in. natural gas pipe line from the east Texas gas fields to Ohio. The commission said the project, estimated to cost $23,500,000, would include five compressor stations totaling 25,000 h.p. It would have an initial daily capacity of 140,000,000 cu. ft. of gas.

Proposed Natural Gas Pipe Line Construction in 1945

During the year 1944, there was constructed or under construction in the United States over 3000 miles of natural gas pipe lines. Natural gas lines proposed for construction in 1945, some of which have been approved and application to WPB for other pending, approximate 3500 miles.

The following are some of the natural gas lines proposed for 1945:

Metropolitan Natural Gas Co., Midland Texas from West Texas to California	1000 miles
Pacific Gas & Elec. Co., from Hugoton field to Riverside, Calif.	1000 "
United Light & Power Co., Chicago, Ill., from Hugoton field to Detroit, Mich., Milwaukee and Madison, Wis.	1000 "
Louisville Gas & Elec. Co., Louisville, Ky., from Louisville to Tenn. gas line	65 "
Dow Chemical Co. LPG line from Humble plant to Freeport, Texas	79 "
Reynosa Pipe Line Co., Corpus Christi, Texas, to supply Monterey, Texas	140 "
Memphis Natural Gas Co., Memphis, Tenn., from North Lisbon field to Monroe field with looping in Arkansas and Mississippi	101 "
Alabama-Tennessee Natural Gas Co., Florence, Ala., from Enville, Tenn., to Muscle Shoals, Ala.	66 "
United Carbon Co., lines to serve two carbon black plants near Odessa, Texas	93 "
Panhandle Eastern Pipe Line Co., loop line on eastern end of system	32 "

Rumbling Trucks

DRESSER COUPLINGS absorb harmful vibration . . . STAY TIGHT!

One of the common causes of leaks in pipes and joints under city streets is vibration set up by heavy and frequent traffic. Such pipe lines are seldom free from the pounding of heavy vehicles.

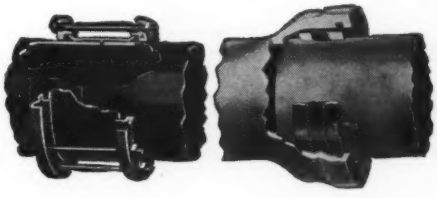
Dresser Couplings, with their resilient gasket seal, "give and take" sufficiently to relieve pipe of such stresses and strains. In effect, a Dresser Coupling is a "shock absorber".

This is a typical advantage of Dresser construction for urban pipe lines. Since 1880, Dresser has been accumulating a wealth of data on pipe joining methods which is available to help solve your problems today. Send us your inquiry; it will receive prompt attention.

★ ★ ★

DRESSER MANUFACTURING DIVISION
Dresser Industries, Inc., Bradford, Pa.
In Texas: 1121 Rothwell St., Sec. 16, Houston, Texas.
In Canada: Dresser Manufacturing Co., Ltd., 60 Front Street, West, Toronto, Ontario.

RESILIENT!



Style 38 for plain-end pipe — Style 85 for Bellmaster pipe

Style 38 Dresser Couplings and the new Style 85 Bellmaster Joints are virtual "shock absorbers" . . . because they employ resilient gaskets under compression to seal pipe tightly. This is the key to decades of reliable, trouble-free service under the most severe operating conditions, as in heavy traffic. Vibration, deflection and other pipe movements are permitted without leakage.

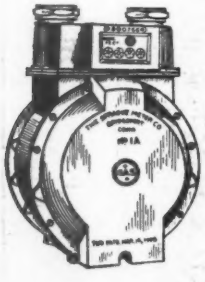
DRESSER COUPLINGS

Watch for New Developments from Sprague

A great many improvements in all fields of endeavor will evolve from scientific advancements made in this war.

New chemicals, new metals, better plastics, synthetics and electronics will find application in civilian goods. It staggers the imagination to visualize what the future may hold.

In any event, you can be assured that SPRAGUE will continue to be in the forefront as it has been for the past forty years.



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